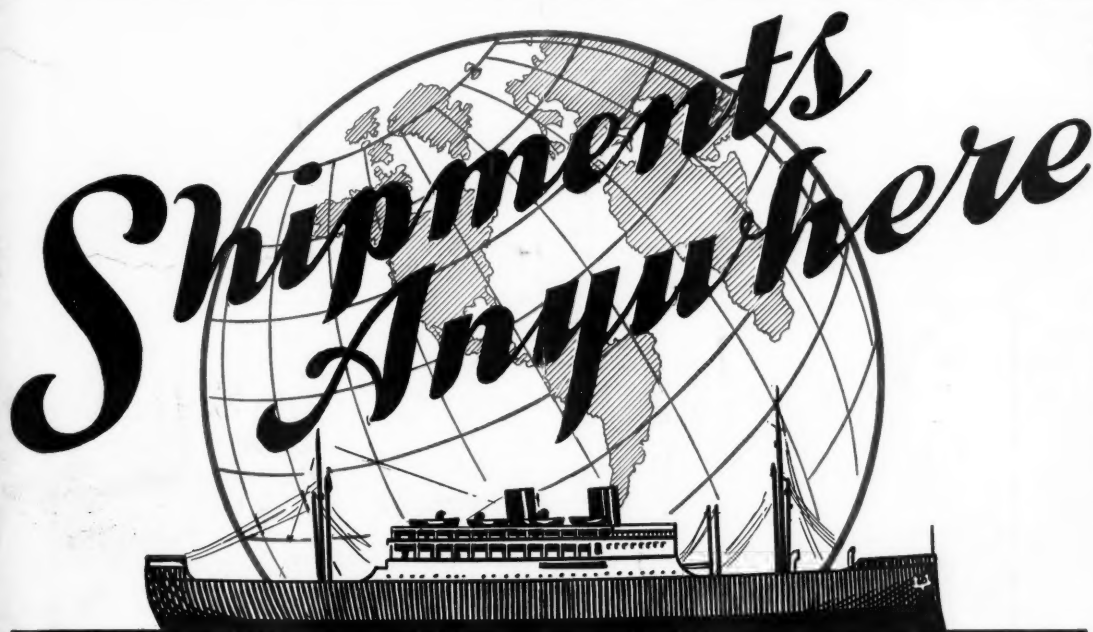


# *The* **American Fertilizer**

Vol. 92

FEBRUARY 3, 1940

No. 3



**SULPHATE of AMMONIA  
AND  
NITRATE of SODA**

**AVAILABLE FOR IMMEDIATE  
SHIPMENT**

**IMPORTERS AND DEALERS IN  
FERTILIZER  
MATERIALS  
COTTONSEED  
PRODUCTS**

**ASHCRAFT-WILKINSON CO.**

**SELLING AGENTS: DUVAL TEXAS SULPHUR CO.**

**ATLANTA, GA.**

**Cable Address: ASHCRAFT**

**CHARLESTON, S. C.  
NORFOLK, VA.**



---

---

# INTERNATIONAL AGRICULTURAL CORPORATION

MANUFACTURERS OF HIGH GRADE FERTILIZERS

DEALERS IN

## FERTILIZER MATERIALS

SUPERPHOSPHATE — MULTIPLE SUPERPHOSPHATE

— OMEGA TANKAGE —

— AMERICAN and FOREIGN POTASH SALTS —

— MINERAL AMMONIATES — TRISODIUM PHOSPHATE —

— COMPLETE FERTILIZERS —

FLORIDA PEBBLE ROCK PHOSPHATE—68%, 70%, 72%, 75%, 77%,

TENNESSEE PHOSPHATE ROCK—72%, 75%, 77%,

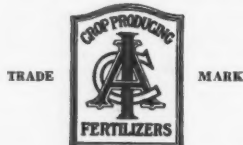
---

*Let us quote on your requirements*

---

General Office:  
61 BROADWAY  
NEW YORK CITY

Southern Headquarters:  
ATLANTA, GA.



Phosphate Rock  
Mines at

MULBERRY, FLA.

MT. PLEASANT, TENN.

WALES, TENN.

---

*Satisfaction at Harvest Time*

---

## Plant Food *for* Fertilizer Sales

**I**N the cultivation of fertilizer orders—through sales literature—a “mixture” of advertising knowledge, a “top dressing” of skilled layout and typography plus “high content” printing, may mean the difference between a spotty crop of orders and the harvesting of a favorable yield in sales tonnage.

The selling of fertilizers of standard grades requires “that extra something” in your direct advertising to enable your brand to overcome present day competition or possible price variations.

You can profitably supplement your agents’ or dealers’ sales efforts with literature which continues to sell after the salesman has left.

May we submit our ideas and printing costs for *your* particular problem?

**WARE BROS. COMPANY** { *PRINTING*  
*Direct Advertising* }

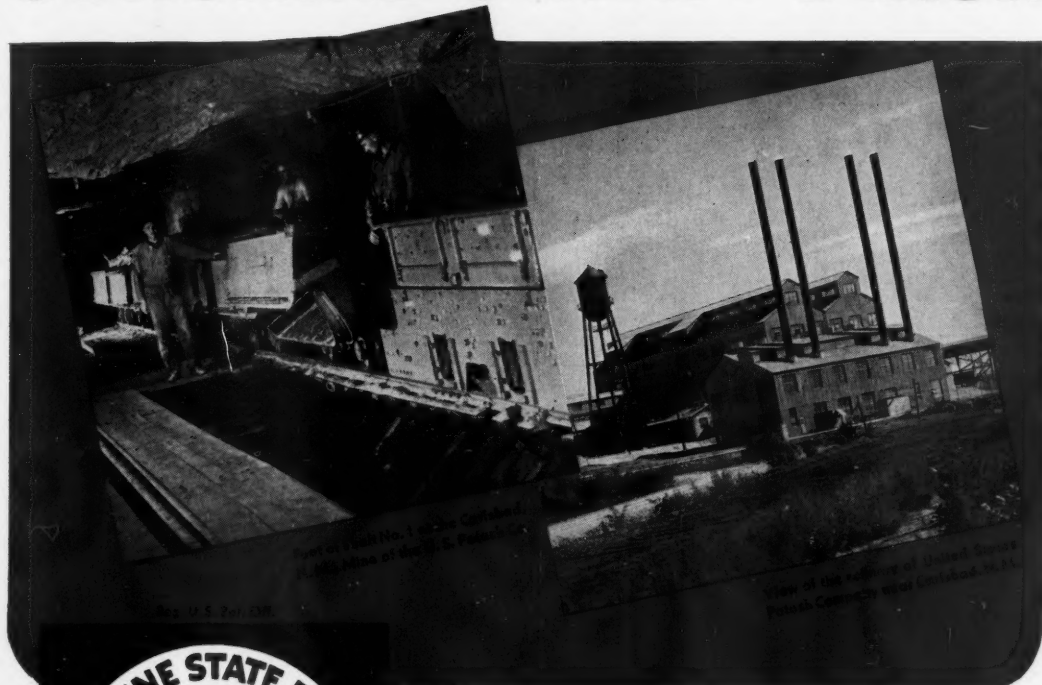
1330 VINE STREET :: :: :: PHILADELPHIA, PA.

FOR SUPERIOR BLENDING  
QUALITY AND CONSISTENT  
UNIFORMITY CHOOSE . . .



Old Sun  
Symbol of the  
Zia Indians

# SUNSHINE STATE POTASH



● The Old Zia sun symbol, well known in New Mexico, the Sunshine State, has been adopted as the trade mark for Sunshine State Potash.

When you use "Sunshine State Potash," you'll know it's the right Potash because of (1) the consistently uniform analyses of our Muriate of Potash and Manure Salts, and (2) the careful sizing, that makes handling and blending easy.

**HIGRADE MURIATE OF POTASH**  
62/63%  $K_2O$  ALSO 50%  $K_2O$  GRADE

● **MANURE SALTS**  
APPROXIMATELY 30%  $K_2O$

**UNITED STATES POTASH COMPANY, INC., 30 ROCKEFELLER PLAZA  
NEW YORK, N. Y.**

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.



**"TRONA"**  
**POTASH**

Trona Muriate of Potash is now being used from coast to coast. Uniformity—excellent mixing qualities—prompt deliveries—have contributed to the increasing popularity of this American product.

*Manufacturers of Three Elephant Borax and Boric Acid*  
*See Page 23*

Branch Sales Offices: Atlanta, Ga.; Baltimore, Md.; Chicago, Ill.; Los Angeles, Cal.

**AMERICAN POTASH & CHEMICAL CORPORATION**  
70 Pine Street New York City

**TRONA**

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

... THE ...

# AMERICAN FERTILIZER

"That man is a benefactor to his race who makes two blades of grass to grow where but one grew before."

Vol. 92

FEBRUARY 3, 1940

No. 3

## Grass Is a Crop, Treat It as Such\*

By A. L. GRIZZARD

*Virginia Agricultural Experiment Station, Blacksburg, Virginia*

PASTURES have played an important part in the advancement of civilization. We find in the first chapter of Genesis where God, after creating the Heaven, earth, and water, said: "Let the earth bring forth grass. . . ." All through Biblical history is recorded the movement of herdsmen to locate pasture. Isaiah realized the importance of pasture when he said: "All flesh is grass." A study of the development of the leading beef and dairy herds of the world will show that those cattle originated and were developed in regions which nature richly endowed with very productive pastures of exceedingly high quality.

We in Virginia are very fortunate in that nature endowed us with some of the best grass lands in the world; namely the Shenandoah Valley and southwest Virginia. But what have we done to preserve those cherished soils and pastures? Until recently, very little. A few farmers have fed on thin spots, manured a few galls, and perhaps spread a little lime and phosphates. For the remainder, potash, phosphoric acid, and nitrogen have been continually removed from the soil in the bones and bodies of meat animals or taken away in animal products.

In checking the acreage of pasture, as compared to that of cultivated crops in Virginia, it is found that for every 100 acres of cultivated crops there are 98 acres in pasture; or, nearly 50 per cent of the acres under cultivation in Virginia are in pasture. In southwest Virginia, the acreage ratio of cultivated crops to pasture is 100 and 168 respectively, while some counties in that section of the State have 280

acres of pasture for every 100 acres of cultivated crops.

We are repeatedly asked by farmers why their pastures do not have the same carrying capacity they had 50 or even 75 years ago. The average carrying capacity of our pastures is one animal to about 5 acres; while in Ireland, it is 1 to 2.6 acres; in the Netherlands it is 1 to 1.6; and in Denmark it is 1 to 1.5 acres. Virginia pastures have a low carrying capacity, because the soils have been depleted of their natural fertility. Few farmers realize that when the average 1,000-pound beef animal, or its equivalent in other animals, goes to market, the equivalent of 100 pounds of 20 per cent superphosphate and 40 pounds of ground limestone leaves the farm in the bones of the animal, and also considerable quantities of nitrogen and potash in the flesh.

In the case of dairy cattle, the removal is even greater, as, not only the animal with its skeleton containing plant food is finally sold, but the milk from one good cow in 1 year contains the equivalent of 125 pounds of nitrate of soda, 50 pounds of 20 per cent superphosphate, 30 pounds of ground limestone, and considerable potash. Also, the rainfall removes, through leaching, about 180 pounds of muriate of potash, 300 pounds of nitrate of soda, and 500 pounds of ground limestone per acre each year. With such heavy plant-food losses taking place in each acre of soil each year for a long period of time, is there any wonder our pastures have such low carrying capacities?

Fortunately, in recent years we are beginning to wake up to the fact that, after all, pastures are nothing more or less than grass and legumes, and that grasses and legumes re-

\* Reprinted from "Better Crops With Plant Food," December, 1939.

quire plant food, regardless of whether they are grown in rotated fields or permanent pastures. Therefore, like any other crop, the yields obtained are in proportion to the treatment and attention given. If properly fertilized and followed with good grazing and management practices, pastures may become one of the more important and profitable crops on the farm.

#### Pastures Respond to Fertilizers

Experiments conducted at many places in Virginia show that pastures respond to lime and fertilizers just as small grains, corn, and clovers do in regular rotations; and in most cases, the amounts and grades of fertilizer used on rotations of small grains, grasses, and legumes will pay on pastures. In actual practice, however, it has proved more practicable to apply the mineral elements to pastures and depend upon the legumes to gather the needed nitrogen. The exceptions to this rule are cases where legumes are absent or very thin in the pastures, where immediate marked response is required, or where products from high-producing cows bring an exceptionally high price.

We have an abundance of experimental evidence which proves conclusively that if pasture is treated like a crop, it does pay to use lime and fertilizers; and in some cases, to lime, fertilize, and reseed. Strong support of the above statement is to be found in the results of an experiment conducted at Chatham on a Cecil sandy loam soil from 1934 to 1938. Two different pasture mixtures were used in this study, but in each case, the lime and fertilizer treatments were the same.

#### Virginia Experiments

Pasture Mixture No. 1 consisted of Kentucky bluegrass, orchard grass, Canada bluegrass, red top, white clover, Korean and Kobe lespedeza. Mixture No. 2 consisted of orchard grass, red top, white clover, and Korean lespedeza. The seedings, with the exception of the lespedeza, were made in August, 1933. Four fertilizer treatments were used with and without lime. Sufficient ground limestone was applied in August, 1933, to adjust the soil reaction to approximately pH 6.5. Again in 1937, the lime-treated plots received an additional application of ground limestone at the rate of 1 ton per acre. Fertilizer is applied annually about March 1. The average (5 years) annual yield of pasture, due to fertilization, has been as shown in Table I.

Table I

Treatments*	Mixture No. 1 Dry matter per acre, lb.			
	Mixture No. 2 Dry matter per acre, lb.		Without lime	With lime
	Without lime	With lime		
No fertilizer..	1,140	2,847	1,207	2,737
P .....	1,772	2,272	2,089	2,548
NP .....	2,020	2,544	1,985	2,513
PK .....	3,066	3,853	2,183	3,299
NPK .....	3,227	3,134	3,276	3,198

\* N—24 pounds of nitrogen per acre derived from nitrate of soda; P—64 pounds of  $P_2O_5$  from superphosphate; K—50 pounds of  $K_2O$  from muriate of potash.

The figures show that pasture (Mixture No. 1) yields were increased from 632 to 2,713 pounds per acre, due to fertilization and liming, as compared to unlimed and unfertilized pasture. Applications of phosphoric acid to unlimed pasture increased the yield 632 pounds per acre. The addition of potash further increased the yield 1,294 pounds, and the addition of nitrogen to phosphoric acid and potash gave an increase of an additional 161 pounds per acre. Applications of phosphoric acid and lime, as compared to untreated pasture, increased the yield 1,132 pounds per acre, and the addition of potash further increased the yield 1,581 pounds. The addition of lime, as compared to untreated pasture, gave an increase in yield of 1,707 pounds per acre.

It will be noted that for pasture Mixture No. 2, the response to fertilizers and lime was very similar to that shown by Mixture No. 1.

#### Glade Spring Experiments

In southwest Virginia at Glade Spring, an experiment was started in 1930 to determine the effect of fertilizers and lime on pastures. For 7 years, fertilizers were applied annually, about March 1st, with and without lime. Ground dolomitic limestone was applied every third year at the rate of 1 ton per acre. This experiment was located on three different soil types. The average (7 years) annual yield of pastures, due to fertilization, is shown in Table II.

Table II

Treatments*	Dry matter per acre, lb.	
	Without lime	With lime
Check .....	1,989	2,148
P .....	2,603	2,553
NP .....	2,821	3,157
PK .....	2,574	2,808
NPK .....	3,359	3,448

\* Each fertilizer element was applied at the rate of 48 pounds per acre. N—nitrogen derived from nitrate of soda; P—phosphoric acid from superphosphate; and K—potash from muriate of potash.

These figures show that pasture yields were increased from 564 to 1,459 pounds per acre due to fertilization, as compared to untreated pasture. Potash, lime, and nitrogen gave moderate increases in yields, as compared to the untreated check. The soils of this region are very deficient in available phosphoric acid, and a marked response to phosphatic fertilizers was obtained.

Fertilizers and lime, in addition to materially increasing the yields of pasture grass, have steadily improved the condition of the sod. Especially noticeable has been the elimination of weeds, mosses, and other undesirable plants with an increase in clovers and bluegrass.

An experiment was started in 1936 at Glade Spring to determine the effect of potash on pastures. Plots were located on Dunmore silt loam and Elliber silt loam soil. Fertilizers were applied annually, both with and without lime. The soil reaction was adjusted to approximately pH 6.5 with ground dolomitic limestone. The average annual yields due to fertilization are given in Table III.

Table III

Treatment	Dry matter per acre, lb.	
	Without lime	With lime
Check .....	3,227	3,822
400 lb., 6-12-0.....	4,490	3,805
400 lb., 6-12-3.....	4,763	4,187
400 lb., 6-12-6.....	5,353	5,145
400 lb., 6-12-12.....	5,249	5,288

These figures show that fertilizers increased the yield of pastures from 578 to 2,126 pounds to the acre, as compared to the untreated check. Potash fertilization, on unlimed pasture, increased the yield from 273 to 863 pounds per acre, while on pasture that had been limed the increase was from 382 to 1,483 pounds, as compared to the pastures which received only nitrogen and phosphoric acid.

#### Blacksburg Experiments

In 1936 another experiment was started to determine the effects of fertilizer on the yield of pastures. This experiment is located at Blacksburg on Dunmore silt loam, at Chatham on Cecil sandy clay loam, and at Williamsburg on Sassafras sandy loam soil. In each case, the soil reaction was adjusted to approximately pH 6.5, with ground dolomitic limestone. The average (2 years, 1937-1938) annual yield of pastures due to fertilization, at each location, has been as listed in Table IV.

These figures show that pasture yields were increased due to fertilization, at Blacksburg,

from 372 to 1,508 pounds to the acre; at Chatham, from 272 to 1,657 pounds; and at Williamsburg, from 326 to 2,553 pounds per acre, as compared to the unfertilized pasture. Potash fertilization increased the yield of pasture 764 and 792 pounds per acre, at Blacksburg and Williamsburg respectively; while the yield at Chatham was slightly less than that of the unfertilized check. This decrease in yield was in all probability due to the poor stand

Table IV

Treatments	Dry matter per acre, pounds		
	Blacksburg	Chatham	Williamsburg
Check .....	1,909	1,772	3,122
500 lb., 10-0-0.....	2,281	2,302	4,561
500 lb., 0-10-0.....	2,926	2,044	4,570
500 lb., 0-0-10.....	2,673	1,388	3,914
500 lb., 10-10-0.....	3,417	2,425	5,225
500 lb., 10-0-10.....	3,104	2,538	3,627
500 lb., 0-20-20.....	2,919	2,608	3,448
500 lb., 10-20-10.....	3,022	3,429	5,675

obtained during the first year of the experiment. This is reflected in the average yield figures which were 851 pounds per acre the first year and 1,925 pounds the second year. A complete fertilizer gave an increase in yield, as compared to the unfertilized check, at Blacksburg, of 1,113 pounds; at Chatham, 1,657 pounds; and at Williamsburg, 2,553 pounds per acre.

Fertilizers, in addition to materially increasing the yields of pasture grass, have given (an average of 2 years), at Blacksburg, 18 days; at Chatham, 18 days; and at Williamsburg, 25 days earlier grazing in the spring than the unfertilized checks.

#### Adequate Fertilization Needed

It has been shown that the yields of Virginia pastures, through proper fertilization, can be doubled and often trebled, and the carrying capacity of pastures increased three-fold. Fertilizers also improve the quality of grass and give earlier spring grazing and later fall pasture than untreated pasture. It pays to beware of false economy in pasture fertilization. It does not help much to give a worn-out pasture a comparatively inadequate fertilizer treatment. No "little dab" of fertilizer is adequate to overcome the bad results of a hundred years or more of soil depletion. Nor is any "one element" fertilizer adequate where two or three elements are deficient, as is so often the case. Best results are secured when adequate quantities of fertilizer are added to supplement and properly balance the plant food supplied by the soil.

## TVA to Increase Fertilizer Program

National Budget Provides Addition Plant Construction.

**I**N the budget for the fiscal year beginning July 1, 1940, now before Congress, the independent offices appropriation bill includes an item of \$3,707,000 for the TVA fertilizer program. In addition to this amount, further receipts of \$2,750,000 are expected through the sale of concentrated superphosphate and an additional \$50,000 through a reduction in fertilizer inventory.

Of this amount, over one million dollars is allotted to new plants and equipment, \$24,000 for phosphate reserves, and over 3½ millions for expenses of manufacturing operations.

Hearings on the appropriation bill brought out the fact that the TVA contemplates completing its present plans for constructing fertilizer producing plants within two years, and that for 1942 an appropriation of only about \$150,000 will be needed for ultimate completion. Of the \$1,040,000 carried in the asset account for new construction, TVA plans to spend \$793,000 to complete its washing plant and to bring its agglomerating plant to within two-thirds of completion. It will also spend \$147,000 for improvements on the plant which is now producing concentrated superphosphate and calcium metaphosphate, and the balance is an overhead item of \$100,000.

The 1941 estimate provides for substantial completion of all major plant items required to secure a completely integrated plant which will be implemented in such a way that TVA can, independently, begin with raw phosphate matrix from its own reserve, and after processing it, deliver fertilizer in bags ready for shipment. The authority has scheduled its fertilizer plant construction program to achieve this objective by June 30, 1941, rather than a later date, because of what it considers to be the importance of having a completely balanced plant as soon as it can be provided. Until such a plant is completed, the authority will be dependent on other sources for the bulk of its phosphate rock supply, and it declares it is becoming increasingly difficult to secure these raw materials from other sources.

The estimated expenditures for the agglomerating and washing plant will provide during the next two years washing facilities, possibly supplemented by a flotation unit, and nodulizing and sintering apparatus. The estimate is based on preliminary studies which show that an ex-

penditure of about \$1,149,000 will be required to provide facilities of the size and capacity needed to meet the raw materials requirements of the manufacturing program. The washing plant, without a flotation unit, is estimated to cost \$919,000, and the nodulizing and sintering apparatus will cost \$230,000.

TVA has already spent \$1,288,000 in phosphate reserves and rights, and now holds an estimated 19,100,000 net tons of matrix in three counties in Tennessee. It contemplates spending an additional \$24,000 to acquire certain small properties needed to round out its present holdings in middle Tennessee. This reserve was acquired with a view of providing the government with an adequate tonnage of phosphate matrix in the face of a fast-dwindling high-grade reserve in that area, for the protection of agriculture and the government's investment in manufacturing facilities located at Muscle Shoals.

It is estimated that when TVA is producing phosphatic fertilizer at capacity from the four electric furnaces, the requirements for phosphate matrix will be close to 400,000 tons annually. It is explained that, while consumption at this rate would not deplete the reserves for almost fifty years, the output of equivalent fertilizer on this basis amounts to only about 9 per cent of total United States consumption.

The fertilizer income and expense account calls for a net expenditure in 1941 of \$2,693,000 after subtracting expected revenues of \$2,750,000 from the AAA from the cost figure of \$3,659,000 for fertilizer to be shipped during that year. In addition to this net loss of \$909,000 in manufacturing operations, the budget for experimental large-scale production and tests is \$1,574,000, other items in this figure being \$472,000 for farm tests and demonstrations, \$85,000 for controlled soil and fertilizer investigations, \$7,000 for transportation studies relating to fertilizer distribution, and \$101,000 for a soil inventory. Other items in the income and expense account are \$632,000 for research and small-scale production tests and \$487,000 for departmental and general administration expense.

A great deal of detailed financial information regarding its fertilizer program was submitted by TVA to the house appropriations committee in answer to questions, but the committee in-

terposed no objections to the way in which the program is being conducted. A statement discussing appropriations for research and development included the following:

#### New Materials Developed

"A newly developed fertilizer is defluorinated rock phosphate, containing 25 to 30 per cent available plantfood. Its process of manufacture, which is simple and should be economical, has been under development for the past three years. A full-scale plant is now in the experimental stage of operation. Limited quantities of the product are being produced for testing by experiment stations.

"A number of new processes for the manufacture of phosphate fertilizers are at present in the laboratory stage of development. Some of these may prove very important, but much research work will be necessary before they can be thoroughly understood and evaluated. These studies include investigations of new methods of manufacturing superphosphate and dicalcium phosphate; a study of fused compounds of calcium phosphate and silica; new concentrated fertilizer products; alternate phosphate defluorination methods; utilization of low-grade phosphate; and methods of analyzing and testing new products."

In answer to questions by committee members, Dr. A. M. Miller, director of chemical engineering for TVA, stated that the authority produced 45,759 tons of concentrated superphosphate in the fiscal year 1938, 68,926 tons in 1939, and in 1941 expects to produce approximately 54,000 tons of available plantfood (phosphoric pentoxide), of which about 40,000 tons will be sold to the AAA and the remaining 14,000 tons will be used in the test and demonstration programs. Questioned about costs, Dr. Miller told the committee:

"For concentrated superphosphate which will be delivered to AAA beginning January 1, 1940, "Triple A" will pay us 66 cents a unit of available phosphoric pentoxide in cotton bags on cars ready for shipment, and according to our estimates for 1941 that material will be supplied at a price above our costs; just how much we cannot tell at the moment, because of the rather rapid change in price of raw materials, due to the increase in business activity and perhaps the unrest in Europe."

He added that the TVA is receiving from AAA a price sufficient to pay for all costs, including construction, personnel, delivery, and everything else, and that there is no loss as far as the government is concerned.

#### PUERTO RICO TRADE INCREASES

Puerto Rico's purchase of fertilizer from continental United States last year totalled 89,500 tons and were 11 per cent greater than in the year before, according to a statement by the Puerto Rican Trade Council.

"The value of the fertilizer shipments was \$2,120,000, or 17 per cent greater than in 1938," the Council said. "The island's purchases of ammonium sulphate, totalling 46,380 tons, were 14 per cent greater. Increased planting of sugar cane during the temporary suspension of sugar quotas was largely responsible for the heavier purchase of fertilizer."

"The sugar industry, which is the principal user of fertilizer in the island, will harvest more cane this year than in 1939 in order to establish a normal carryover, but present indications are that the 1941 harvest will be only large enough to cover quota requirements."

Puerto Rico's buying power during 1940 is expected to be somewhat higher than in 1939, according to the statement. Although the output of the island's principal industries continues to be restricted by Federal legislation, expenditures in Puerto Rico for national defense and Federal relief probably will be heavier than in 1939, the Council said.

The island's purchases of all goods from the states totalled \$86,450,000, a gain of 7 per cent over the year before, all of the increase having occurred during the last four months of the year, following the outbreak of war in Europe, the Council reported. Puerto Rico ranked ninth as a market for goods shipped from the U. S. mainland, buying more merchandise than any country in Latin America.

#### PHOSPHATE RESOURCES COMMITTEE ASKS EXTENSION

Congressman J. Hardin Peterson of Florida, Chairman of the Joint Committee to Investigate the Adequacy and Use of Phosphate Resources of the United States, has introduced H. J. Res. 425, proposing to extend the life of the Committee to January 15, 1941. In the report of the Committee it was stated that its responsibility could not be discharged without conducting some field hearings and investigations at the point of deposits, referring particularly to deposits of potash and manganese, which minerals were added to the scope of the Committee's investigations by the Congress. It is expected that hearings will be held during the coming summer on potash and manganese and possibly one final hearing on phosphate resources.

## Chicago Heat-Dried Activated Sludge

By LANGDON PEARSE

*Sanitary Engineer, The Sanitary District of Chicago.*

**H** EAT-DRIED activated sludge is now receiving the recognition it deserves as a valuable fertilizer and soil conditioner. It is fairly low in ash. Practically all of its nitrogen is insoluble in water but readily available to growing crops. Because of its greater nitrogen content with high availability, heat-dried activated sludge has been much more in demand as a fertilizer than digested sludge in which the nitrogen has very low availability. Activated sludge is free from weed seeds and blends quickly. It can be used with safety in mixing fertilizer on practically all crops requiring nitrogen in organic form.

At the outset of the activated sludge development in the United States such pioneers as Bartow, Hatton and Sands realized the importance of developing a useful by-product, the sale of which would reduce the cost of operating the process and disposing of the sludge. Among the early investigators of the fertilizer values of activated sludge were Hatfield and Noer. In 1923, the Milwaukee Sewerage Commission enlisted the active support of the Wisconsin Agricultural Experiment Station. The investigation was placed in the hands of A. J. Noer, an agricultural specialist, under the direction of Professor E. Truog. Nearly four years of intensive research followed in the laboratory, greenhouse and field.

Long before Milwaukee began production of activated sludge in 1936, extended tests were conducted with the aid of activated sludge produced by The Sanitary District of Chicago in its Des Plaines River Works (in operation in 1922) on more than 100 plots at the various experimental farms. Today the largest activated sludge treatment works in the world is being operated by The Sanitary District of Chicago. This produces heat-dried activated sludge, all of which is moving in bulk to the fertilizer trade. The District contains an area of about 442 square miles, including sixty villages and cities, of which Chicago is the largest. The present population in the District is in the neighborhood of 4,700,000. The area within the boundaries of the District has been divided into four main projects, known as

the North Side, West Side, Southwest and the Calumet. Each of these projects comprises an extensive system of intercepting sewers running along the banks of the Chicago River and its branches or the Calumet River, which picks up the sewage from municipal outlets and carries it to the treatment works. Three of the works are utilizing the activated sludge process, namely, the North Side, Southwest and the Calumet Works.

### The Process of Manufacture

The activated sludge process consists essentially of passing sewage through an aeration tank for a period of several hours, settling out the solids, and returning the solids to mix with the incoming sewage. After operating for a couple of weeks, the so-called activated sludge acquires the power of coagulating the finer material in the incoming sewage and also of oxidizing and stabilizing the organic matter in solution. When the desired balance has been reached in operating, and sufficient live activated sludge has been built up to work the process successfully, excess sludge is drawn out of the system continuously throughout the 24 hours.

Experience and investigation has shown that for the purpose of the Sanitary District the most successful way of disposing of the solids known as excess activated sludge is by conditioning the sludge with a coagulating chemical, usually ferric chloride, and dewatering the solids on continuous vacuum filters, producing a cake which contains around 78 to 80 per cent moisture. This cake is mixed with pre-dried material, so that the moisture in the mixture is about 45 per cent. The mixture is then introduced into a stream of superheated vapor at a temperature of 900 to 1,200° F., and passes through a squirrel cage mill, which breaks the particles down into a condition where the moisture is quickly released. In about three minutes the solids are settled in a cyclone and are found to be dried to about 6 per cent moisture. The procedure as set up in the Southwest plant and in the Calumet plant primarily is directed towards blowing the heat-

dried sludge into a furnace in air suspension. As the material normally contains about half the heat value of Illinois coal, it burns readily, with an intense gaseous flame and ordinarily will generate sufficient heat to dry the wet sludge. At times some additional fuel has to be burned.

The apparatus as set up, however, also permits drawing the heat-dried material from the system for delivery into freight cars or bags for shipment as fertilizer.

#### Not a New Discovery

The value of this material as a fertilizer was discovered over 20 years ago. The discovery has shown that the material produced by the activated sludge process is of value in agriculture to supply organic nitrogen, available phosphoric acid, and humus. The nitrogen may vary according to the character of the sewage. Two per cent, more or less, of available phosphoric acid is generally present, and a trace of potash.

The material is sought for by mixers as a raw material to add to chemicals in making balanced fertilizers for growing various kinds of crops. To the mixer, the heat-dried activated sludge represents organic nitrogen, which is desired for many soils, and a conditioning material which aids in the mixing and blending of the fertilizer and prevents the caking of the chemicals entering therein. The sludge also contains various mineral constituents which are sought for in growing plants.

The Southwest plant of The Sanitary District of Chicago is located on the banks of the Main Channel which is now a part of the Illinois Waterway, a navigable stream of the United States. The waterway extends from Lake Michigan to the Mississippi River. Shipments can be made by barges through this waterway to the Gulf of Mexico or through the Great Lakes and the New York Barge Canal and Hudson River to the Atlantic Seaboard.

#### Plant Now in Production

Although the Southwest plant started aeration in June, 1939, the first fertilizer production did not begin until early October, 1939. The District has expended considerable money at both the Southwest and Calumet plants in experimenting on sludge dewatering and drying, and acquiring suitable equipment to put the final product in excellent mechanical condition. With such a large operation as the Southwest plant, this requires adjustment in the screen-

ing, grinding and loading devices. The Southwest and Calumet Works have been built and are operated by The Sanitary District of Chicago, of which Ross A. Woodhull is President and William H. Trinkaus is Chief Engineer. They were projects of the Public Works Administration (PWA).

#### H. J. Baker & Bro., Appointed Distributors

H. J. Baker & Bro. have been appointed by the Sanitary District as sole distributors for the entire production of heat-dried activated sludge. They are one of the oldest and largest concerns in the United States in the fertilizer material business and the largest distributor of fertilizer organics, with offices at New York, Baltimore, Chicago, Savannah, Tampa and Buenos Aires.

#### GERMAN NITROGEN PRODUCTION

Although official data are not available, conditions indicate that Germany's production of synthetic nitrogen has increased markedly in 1939, especially in the latter half-year. In addition to requirements for fertilizer purposes, in peacetime absorbing the great bulk of the national nitrogen production, increased production of nitrogen doubtless has been stimulated by markedly augmented technical requirements created by wartime conditions. The extent to which these technical requirements have been expanded is suggested by the action of the Reichs Government shortly following the outbreak of the present war in placing restrictions upon the consumption of nitrogen for fertilizer purposes, calculated to reduce national consumption of nitrogenous fertilizer to 75 per cent of the requirements of 1938-39.

This action was the more significant in view of Germany's large capacity for producing nitrogen, of which a great part was idle in normal peacetimes. Germany in 1934 was credited with installed capacity for manufacturing over 1,300,000 metric tons of pure nitrogen annually, of which, until recent times, it was impossible to utilize much over 50 per cent due to insufficient demand. The restrictions upon nitrogenous fertilizer consumption are also significant in the light of Germany's vigorous campaign for maximum crop production and aggressive measures taken by the Government, including drastic price reductions, for stimulating fertilizer consumption to maximum levels as a means of augmenting the nation's domestic food supply in independence of imported foodstuffs. In 1935 Germany produced 588,500 metric tons N in the form of nitrogenous fertilizer, compared with 513,500 tons in 1934.

## THE AMERICAN FERTILIZER

ESTABLISHED 1894

PUBLISHED EVERY OTHER SATURDAY BY WARE BROS. COMPANY  
1330 VINE STREET, PHILADELPHIA, PA.

A MAGAZINE INTERNATIONAL IN SCOPE AND CIRCULATION  
DEVOTED EXCLUSIVELY TO THE COMMERCIAL FERTILIZER  
INDUSTRY AND ITS ALLIED INDUSTRIES

PIONEER JOURNAL OF THE FERTILIZER INDUSTRY

WARE BROS. COMPANY

PUBLISHERS

1330 VINE STREET

A. A. WARE, EDITOR

PHILADELPHIA, PA.

### ANNUAL SUBSCRIPTION RATES

U. S. and its possessions, also Cuba and Panama.....	\$3.00
Canada and Mexico.....	4.00
Other Foreign Countries.....	5.00
Single Copy.....	.25
Back Numbers.....	.50

THE AMERICAN FERTILIZER is not necessarily in accord  
with opinions expressed in contributed articles that appear  
in its columns. Copyright, 1940, by Ware Bros. Company.

Vol. 92	FEBRUARY 3, 1940	No. 3
---------	------------------	-------

### Principal Articles in This Issue

	PAGE
GRASS IS A CROP, TREAT IT AS SUCH.....	5
TVA TO INCREASE FERTILIZER PROGRAM.	8
CHICAGO HEAT-DRIED ACTIVATED SLUDGE.	10
North African Phosphates in 1939 .....	14
January Tag Sales .....	13
FERTILIZER MATERIALS MARKET:	
New York .....	15
Baltimore .....	15
Atlanta .....	17
Wilmington .....	18
Chicago .....	20
Tennessee Phosphate .....	20
Fertilizer and Corn .....	22
Superphosphate Production in 1939 .....	24
Fertilizer and Cotton .....	26

### CALLISTER RESIGNS FROM POTASH INSTITUTE

George J. Callister, Vice-President and Secretary of the American Potash Institute, Inc., Washington, D. C., since its organization in 1935, resigned on January 31st. He will reside in Canada, where he plans to render whatever service is possible, in a civil capacity, to help his country in the current war.

Mr. Callister has been associated with the potash industry since 1910, except for war service in France and Belgium and post-graduate work at Cornell University.

He has contributed to many fields of agromomic work including work in the early development of short chemical methods of testing soils and plants for nutrient deficiency symptoms; research on economic factors affecting changes in fertilizer consumption and other problems; and the publication of and contributions to industrial journals, both agricultural and economic. He was a member of the National Joint Committee on Fertilizer Application and of the Plant Food Research Committee. He has been associated with agricultural research projects, in cooperation with State agricultural colleges and experiment stations, in all parts of the United States and Canada. He is a member of many learned societies and of the parent chapter of the Honorary Scientific Society of Sigma Xi at Cornell University.

Mr. Callister brought to the fertilizer industry and scientific agriculture a clear view of the necessity of cooperation between these two great forces upon which modern agriculture depends. He stood for cooperation between the several fertilizer industries and between these industries and State and Federal agricultural authorities. He did much to make industry's viewpoint and accomplishment better understood by agricultural scientists and to bring to industry the work of the scientists.

### POTASH EXPLORATIONS

The U. S. Consular service reports progress in the exploration and development of new potash deposits in at least two foreign countries. In Switzerland discoveries in the Cantons of Baselland and Aargau seem to promise an eventual supply of potash that will supply Swiss requirements for that material. In Libya, an Italian company has already produced 2,100 tons of potash salts during 1939. When transportation difficulties are overcome, the industry expects an annual output of at least 25,000 tons.

## January Tag Sales

January tax tag sales in 17 States represented 428,643 tons, according to reports by state control officials to The National Fertilizer Association. The total was 5 per cent less than a year ago and 7 per cent less than two years ago.

Total sales in the first seven months of the current fiscal year, from July through January, were moderately larger than in the corresponding period of 1938-1939 and were also very slightly larger than two years ago. Total tonnage was, in fact, the largest for any corresponding period since the data became available.

With seven of the twelve Southern States reporting smaller January sales than a year earlier, the area as a whole registered a 13 per cent decline. The greatest tonnage declines were in the Carolinas. Mississippi sales were unusually large for the month, and smaller increases occurred in Arkansas, Florida, Texas, and Louisiana.

July-January sales in the South were somewhat smaller than last year, but with that exception were the largest for the period in many years. Declines from last year were

marked in the Carolinas and Georgia, while they were smaller in Virginia, Tennessee, and Texas. These declines more than offset the increases in the other six States.

Total sales in the July-January period in the Midwest were 21 per cent above last year but were somewhat less than two years ago. Kansas was the only one of the five States to report a drop. While sales in Kentucky and Missouri were above last year, they were smaller than two years ago.

The percentage distribution of tag sales through the year is shown by the following table. The figures indicate the proportion of the total year's sales in each area made in each month of the year, based on average results in the five years from 1935 through 1939.

Month	South	Midwest
Jan. ....	8.4%	3.4%
Feb. ....	14.3	9.7
March ....	32.5	18.2
April ....	23.1	11.4
May ....	5.8	11.1
June ....	2.0	0.6
July ....	0.9	2.2
Aug. ....	1.0	20.1
Sept. ....	2.9	18.3
Oct. ....	3.1	4.6
Nov. ....	2.2	0.2
Dec. ....	3.8	0.2

### FERTILIZER TAX TAG SALES\*

(Compiled by The National Fertilizer Association)

	January				July-January			
	Per Cent of 1939	1940 Tons	1939 Tons	1938 Tons	Per Cent of 1939	1939-40 Tons	1938-39 Tons	1937-38 Tons
<b>SOUTH:</b>								
Virginia†	87	34,073	39,007	48,064	96	139,510	145,337	155,634
N. Carolina	62	82,683	132,355	108,106	83	198,550	239,989	231,252
S. Carolina	29	15,145	52,436	63,798	65	59,090	90,275	107,420
Georgia	79	28,487	36,269	33,450	50	54,103	108,274	58,095
Florida†**	107	75,196	70,308	77,777	104	367,163	353,191	355,150
Alabama	93	33,600	35,950	32,100	116	51,250	44,100	44,460
Mississippi	284	54,450	19,150	20,905	229	107,615	47,032	24,131
Tennessee†	1	20	2,705	3,921	71	15,289	21,531	28,928
Arkansas†	131	19,050	14,550	9,850	138	28,300	20,500	12,600
Louisiana†	106	22,150	20,800	23,133	125	59,162	47,370	48,679
Texas†	106	13,793	13,025	13,690	113	28,645	25,389	29,179
Oklahoma	61	1,362	2,250	2,710	78	2,786	3,585	4,445
Total South	87	380,009	438,805	437,504	97	1,111,463	1,146,573	1,099,973
<b>MIDWEST:</b>								
Indiana	656	42,125	6,419	4,025	130	147,956	114,158	143,301
Illinois	85	1,080	1,278	2,075	111	15,961	14,351	14,981
Kentucky	72	2,450	3,423	13,370	136	29,903	22,068	42,551
Missouri	173	2,029	1,176	2,276	105	48,894	46,729	53,309
Kansas	528	950	180	90	94	13,861	14,717	13,422
Total Midwest	390	48,634	12,476	21,836	121	256,575	212,023	267,564
Grand Total	95	428,643	451,281	459,340	101	1,368,038	1,358,596	1,367,537

\* Monthly records of fertilizer tax tags are kept by state control officials and may be slightly larger or smaller than the actual sales of fertilizer. The figures indicate the equivalent number of short tons of fertilizer represented by the tax tags purchased and required by law to be attached to each bag of fertilizer sold in the various states.

† Cottonseed meal sold as fertilizer included.

‡ Excludes 37,800 tons of cottonseed meal for July-January combined, but no separation is available for the amount of meal used as fertilizer from that used as feed.

\*\* Includes 55,717 tons of phosphatic and lime materials for July-January.

## CORN ACREAGE ALLOTMENTS

State corn acreage allotments for the commercial corn producing area for 1940 aggregate 36,638,000 acres, compared with 41,239,659 acres for 1939. Reduction is attributed to increased yields of the last few years, the abundant supply of corn, and the ever-normal granary. Total wheat acreage allotments of 62,000,000 acres, previously announced, are 7,000,000 acres higher than for 1939.

North African Phosphates  
in 1939

According to preliminary figures issued by the Bureau of Algerian and Tunisian Phosphates, Paris, the production of phosphate rock in French North Africa totaled 3,913,489 metric tons, an increase of 8 per cent over 1938 production of 1,637,011 tons but somewhat less than the 1937 output of 4,036,295 tons. The increase was greatest in Algeria and Tunis, as the production in Morocco seems to be leveling off, after noteworthy increases during the past few years.

About 90 per cent of the tonnage produced was shipped to European destinations. France and Italy were by far the best customers, the latter country increasing its purchases by over 115,000 tons. Germany and Spain also showed striking increases, the end of the civil war in the latter country allowing a return to more normal agricultural practices. The use of phosphates in the countries of Tunis, Morocco and Algeria continued to increase.

The preliminary production figures by companies and countries are as follows:

Algeria	1939 Metric Tons	1938 Metric Tons
Cie. du M'Zaita .....	48,492	34,644
Cie. du Constantine (Dj. Kouif) .....	523,095	492,411
	571,587	527,055

## Tunis

Cie. du Constantine (Ain Kerma) .....	21,925	25,825
Cie. de Gafsa .....	1,197,118	1,096,441
Cie. du M'Dilla .....	327,320	286,313
Cie. des Phos. Tunisiens .....	228,248	170,957
Cie. de Rebiba .....	75,537	57,475
	1,850,148	1,637,011

## Morocco

Office Cherifien des Phosphate....	1,491,754	1,447,544
Total Production—		
French North Africa .....	3,913,489	3,611,610

## Destination of Shipments

	1939 Metric Tons	1938 Metric Tons
<i>Europe</i>		
France .....	834,496	758,527
Italy .....	811,865	694,957
Germany .....	389,494	326,515
Spain .....	333,411	178,502
Great Britain .....	333,398	406,983
Holland .....	251,492	283,126
Denmark .....	208,823	168,410
Belgium .....	118,804	121,750
Portugal .....	114,098	111,767
Danzig .....	23,914	27,431
Hungary .....	22,775	17,890
Latvia .....	12,119	20,346
Jugoslavia .....	11,478	4,295
Greece .....	10,662	16,088
Switzerland .....	6,294	4,091
Poland .....	5,804	43,018
Norway .....	4,471	14,643
Czechoslovakia .....	3,926	41,940
Sweden .....	3,222	9,242
Lithuania .....	3,018	16,029
Finland .....	2,787	....
Austria .....	....	8,399
Rumania .....	....	3,400

## Other Countries

Tunis .....	173,107	158,599
South Africa .....	113,069	74,479
Algeria .....	62,559	54,638
Morocco .....	26,081	19,901
Japan .....	25,299	20,016
Belgian Congo .....	2,538	1,046
Dutch East Indies .....	1,697	1,277
French Indo-China .....	1,000	1,010
Other Countries .....	1,789	3,277

## BRADLEY &amp; BAKER

## FERTILIZER MATERIALS - FEEDSTUFFS

## AGENTS - IMPORTERS - BROKERS

155 E. 44th Street  
NEW YORK

Clinton St. & Danville Ave.  
Baltimore, Md.

BRANCHES  
505 Royster Building  
Norfolk, Va.

505 Barnett Bank Building  
Jacksonville, Fla.

**FERTILIZER MATERIALS MARKET****NEW YORK**

**Market Quiet with Prices Unchanged. Export Sales Not Yet Fully Developed.  
Lower Bag Prices Reported.**

*Exclusive Correspondence to "The American Fertilizer."*

NEW YORK, January 29, 1940.

Domestic trading continues quiet on fertilizer materials of all kinds, with prices in general remaining the same.

Export inquiries are spasmodic and the general feeling is that orders will be placed ultimately, but at the moment offerings are accepted in comparatively few instances.

**Nitrate of Soda**

No change in price.

**Sulphate of Ammonia**

Market firm at the schedule price for domestic use. Ample supplies. On export shipments, manufacturers are asking higher prices and certain quantities have been sold for export, not only by manufacturers but also by second hands.

**Superphosphate**

Market continues unchanged. If the expected demand for export materializes, there will undoubtedly be a shortage of the ordinary superphosphate and from the present outlook very little, if any, triple superphosphate will be available for export.

**Potash**

The market for domestic consumption is unchanged with ample supplies available.

**Bone Meal**

General conditions unchanged, and with the lack of European supplies this material should remain in good demand.

**Nitrogenous Material**

Supplies plentiful with little buying activity.

**Dried Blood**

Market quiet. New York City production last sold at \$3.40 (\$4.13½ per unit N). South American market lower and offerings are available at \$3.30 (\$4.01 per unit N), c.i.f.

**Tankage**

Market weak. Reported sales last week of 10 per cent unground material at \$3.15 (\$3.83 per unit N) and 10 cents f.o.b. New York, otherwise no business has passed.

**Fish Scrap**

Menhaden supplies scarce and no offerings on the market. Menhaden meal, \$58.00 f.o.b. Baltimore. Japanese sardine meal is a little easier, with offerings to arrive at \$51.00.

**Bags**

The weakening in the burlap market in the last week or 10 days has been reflected in considerable lower prices on bags.

**BALTIMORE**

**Market Listless. Weather Hinders Fertilizer Sales.**

**No Shortage of Materials. Bag Prices Lower.**

*Exclusive Correspondence to "The American Fertilizer."*

BALTIMORE, January 31, 1940.

Business in fertilizer materials during the past two weeks has been more or less listless, and unfavorable weather conditions have also proven a detriment as far as salesmen calling on their trade is concerned.

**Ammoniates.**—The market on feeding materials has eased up slightly and the nominal market on feeding tankage is \$4.25 per unit of nitrogen and 10 cents per unit of B. P. L., f.o.b. Baltimore, but with only a limited demand.

**Nitrogenous Material.**—Due to lack of activity on the part of buyers, this market has also softened to about \$3.25 per unit of nitrogen, c.i.f. Baltimore, but with no business passing.

**Sulphate of Ammonia.**—Most manufacturers are now taking deliveries against con-

# FERTILIZER MATERIALS



*Let Us Quote You  
on Your Requirements of These Materials*

- PHOSPHATE ROCK
- SUPERPHOSPHATE
- DOUBLE  
SUPERPHOSPHATE
- NITRATE of SODA
- SULPHURIC ACID
- SULPHATE of  
AMMONIA
- BONE MEALS
- POTASH SALTS
- DRIED BLOOD
- TANKAGES
- COTTONSEED MEAL
- BONE BLACK
- PIGMENT BLACK
- SODIUM  
FLUOSILICATE



## ARMOUR FERTILIZER WORKS

*General Offices: Walton Building, Atlanta, Ga.*

*Division Sales Offices:*

Albany, Ga.  
Atlanta, Ga.  
Augusta, Ga.  
Baltimore, Md.  
Birmingham, Ala.  
Chicago Heights, Ill.

Cincinnati, Ohio  
Columbia, S. C.  
Columbus, Ga.  
East St. Louis, Ill.  
Greensboro, N. C.  
Havana, Cuba

Houston, Texas  
Jacksonville, Fla.  
Montgomery, Ala.  
Nashville, Tenn.  
New Orleans, La.  
New York, N. Y.

Norfolk, Va.  
Presque Isle, Me.  
San Juan, P. R.  
Sandusky, Ohio  
Wilmington, N. C.

tracts previously booked, and for domestic use no re-sale buying has developed as yet.

**Nitrate of Soda.**—Some of the manufacturers are now starting to take deliveries, and the market on both the domestic and imported brands remains firm and unchanged at \$29.00 per ton of 2,000 lb., in bulk, f.o.b. port warehouse, with usual differential in 200-lb. bags and in bulk.

**Fish Meal.**—The price remains unchanged, ranging from \$58.00 to \$59.00 per ton of 2,000 pounds, in bags, f.o.b. Baltimore, guaranteed 55 per cent protein.

**Superphosphate.**—The position of this market continues firm and practically all mixers have now covered for their wants, with deliveries moving in fairly good volume. The market continues firm, subject to change without notice, at \$8.50 per ton of 2,000 lb. basis 16 per cent, for run-of-pile, and \$9.00 per ton of 2,000 lb., for flat 16 per cent grade, both in bulk, f.o.b. Baltimore.

**Potash.**—With stocks already in warehouses of manufacturers and arrivals of foreign as well as domestic potash, it would appear that there will be no scarcity for manufacturers' normal requirements for the present season. At the present time there has been no reselling, and it looks as though there will be ample to go around.

**Bone Meal.**—The market continues firm with offerings at a minimum. The nominal market on 3 and 50 per cent steamed bone meal continues at \$32.00 to \$36.00 per ton, with 4½ and 47 per cent South American raw bone meal being quoted at \$30.00 to \$32.00 per ton, c.i.f. Baltimore.

**Bags.**—The burlap market has taken a nose dive during the past two weeks, and the present price of plain, new 10-oz. bags for spring

delivery is about \$130.00 per thousand, basis 40 cut 54 in. delivered Baltimore, making a reduction of approximately \$26.00 per thousand since last report.

## ATLANTA

**Weather Damage Presages Greater Spring Fertilizer Demand. Material Market Quiet.**

*Exclusive Correspondence to "The American Fertilizer."*

ATLANTA, January 30, 1940.

The heaviest snow in years has blanketed the Southeast for the last week and freezing temperature has extended as far south as Tampa and Orlando in Florida. It is still snowing at this writing in Tennessee and the entire country is blanketed from Baltimore south and as far west as Arkansas. Ice flows are emptying into the Gulf of Mexico for the first time in thirty years and the damage to fruit and truck crops has been extensive even as far as Brownsville, Texas, and the Rio Grande Valley.

It is impossible as yet to estimate the actual damage that has occurred, but it is quite evident that rehabilitation work will have to start shortly and that as a result of this unusual weather, a heavy fertilizer demand is likely to be experienced during the spring season.

The markets strangely enough have not reflected as yet any unusual demand and prices are still at favorable levels.

Current quotations are:

**Blood.**—Domestic, \$3.90 (\$4.74 per unit N), Chicago; imported, \$3.50 (\$4.25½ per unit N), c.i.f.

**Tankage.**—Fertilizer grade, \$3.50 (\$4.25½ per unit N) and 10 cents, Chicago; South American, \$3.65 (\$4.43½ per unit N) and 10 cents, c.i.f.

Manufacturers' Sales Agents for **DOMESTIC**

**Sulphate of Ammonia**

Ammonia Liquor

::

Anhydrous Ammonia

**HYDROCARBON PRODUCTS CO., INC.**

500 Fifth Avenue, New York

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

# NATURAL CHILEAN *Nitrate of Soda*

**Old Style and Champion  
Both Guaranteed  
16% NITROGEN**

Valuable not only as a source of nitrogen, but also to help maintain the supply of other plant food elements *naturally* blended with it.

**YAS SUH, FOLKS..  
An' Now We's Back  
on Yo' Radio**



Enjoy the Uncle Natchel program every Saturday night on WSB, WRVA and WSM, and every Sunday afternoon on WIS, WPTF, WBT, KWKH, WJDX, WMC, WWL, WAGF, WDBO, WSFA, WJRD, WJBY.

## CHILEAN NITRATE Sales Corporation

120 BROADWAY, NEW YORK

RALEIGH, N. C. ATLANTA, GA. JACKSON, MISS.

MONTGOMERY, ALA. COLUMBIA, S. C.

LOS ANGELES, CALIF.

*Nitrogenous.*—Domestic, \$2.00 (\$2.43 per unit N), Milwaukee; imported, \$2.65 (\$3.22 per unit N), c.i.f. Atlantic ports.

*Fish Meal.*—Imported, \$54.00, ex vessel Southern ports; menhaden, \$53.00, Carolina producing points.

*Nitrate of Soda.*—No change from importers' schedule.

*Sulphate of Ammonia.*—Spot situation slightly easier, with indications that there will be ample supplies for spring at no advance in price on domestic business.

*Raw Bone Meal.*—4½ and 45 per cent, \$27.50, c.i.f.

*Steam Bone Meal.*—3 and 50 per cent, \$27.00, c.i.f.

*Cottonseed Meal.*—Prime 8 per cent, \$29.00, basis Memphis; \$31.00, f.o.b. Southeastern mill points.

### WILMINGTON

Weather Conditions Hinder Trading Activities. Solution of British Tobacco Purchase Problem Expected.

*Exclusive Correspondence to "The American Fertilizer."*

WILMINGTON, January 29, 1940.

The bad weather of the past two weeks has caused a stoppage of interest in trading. Organics are generally inclined to weakness due to lack of interest but the declines are not important as yet. The English position relative to use of American tobacco is causing some trepidation but many express the belief that in the end it will have little effect on the total tonnage to be exported, for the tobacco cannot be used until it has been aged and it can age over here as well as in England and there is no need for using valuable cargo space at this time for a commodity that will simply remain in storage for three years over there. The most serious aspect is the Exchange but if the Government continues the plan, adopted last season when the markets re-opened, of buying the tobacco and holding it for the usual export buyers, there should be little effect—provided this is thoroughly explained to the growers. It is not believed that the effort to substitute Turkish tobacco will be entirely successful.

The fishing season in the Carolinas is over, with only small lots left on hand in excess of contracts. When this small tonnage is disposed of, there will be no more available until May or June.

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

## AMERICA'S QUALITY MULTIWALL PAPER FERTILIZER BAG

If you use, or now consider using, paper bags for packing fertilizer, it will pay you to investigate Bemis Multiwall Paper Fertilizer Bags. No other paper bag has the same uniform quality construction to give your product complete protection in transit and storage. And you get extra sales appeal from the unusually clear-cut printing of your brand on Bemis Bags.



### Note These Bemis Features

**SELF-FORMING GUSSETS**—Bemis Self-forming gussets speed closing because the gussets re-form automatically, facilitating the sewing operation. Full open mouth aids filling.

**UNIFORM QUALITY CONSTRUCTION**—Your product is assured unfailing protection by the uniformity of Bemis construction and the high quality of materials used.

**SPECIAL BEMIS PROTECTION**—Siftproof... moisture-resistant... airtight... odorless... any or all of these specialized protective features are available in Bemis Multiwall Bags.

### Closed by Sewing or Tape

In many cases present sewing equipment will prove satisfactory, or can be inexpensively adapted for closing Bemis Multiwall Paper Fertilizer Bags. Where an extra-strong, siftproof or more attractive closure is desired, a Bemis Tape Sealer is recommended.

Quick, dependable service is assured through strategically located Bemis plants and sales offices. Send coupon below today.

**BEMIS BRO. BAG CO.**  
St. Louis, Mo.

Also makers of Cotton, Burlap, and  
Waterproof Paper-lined Sackliners Bags.

BEMIS BRO. BAG CO., 411 Poplar Street, St. Louis, Mo.  
Send me details and prices on Bemis Multiwall Paper Fertilizer Bags. We use \_\_\_\_\_ lb. Bags. They are closed by  
☐ Machine Sewing ☐ Hand Sewing ☐ Wire Ties  
We (do) or (do not) need waterproof protection.

Firm Name \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

## CHICAGO

**Fertilizer Materials Market Slow with Supplies Somewhat Short. Feed Market Lower but Inactive.**

*Exclusive Correspondence to "The American Fertilizer."*

CHICAGO, January 29, 1940.

The organic market remains very slow, with offerings priced somewhat lower. The quantity of material offered, however, has shown no material increase, which may indicate sellers are in fairly well sold-up position. Unusual wintery weather has temporarily delayed seasonal activity in the South, while in the Central West territory fertilizer business is in a chaotic state.

Lower list prices recently made on meat scraps and digester tankage seemingly did not stimulate business. This was disappointing, particularly as it was thought the heavy snow fall would increase consuming demand.

Nominal prices are as follows: High grade ground fertilizer tankage, \$3.25 to \$3.50 (\$3.95 to \$4.25½ per unit N) and 10 cents; standard grades crushed feeding tankage, \$3.75 to \$3.85 (\$4.56 to \$4.68 per unit N) and 10 cents; blood \$3.65 to \$3.70 (\$4.43½ to \$4.49½ per unit N); dry rendered tankage, 72 to 77 cents per unit of protein, Chicago basis.

## TENNESSEE PHOSPHATE

**Cold Spell Closes Outside Operations but Shipments Continue, Exceeding January of Previous Year.**

*Exclusive Correspondence to "The American Fertilizer."*

COLUMBIA, TENN., January 29, 1940.

The last cold spell that is just beginning to break a little, is the longest continuously cold spell this country has ever known. The official thermometer at Ashwood registered 17 below

zero. Nothing in the memory of the oldest inhabitant has been so low down, the next official record being 13 below at Ashwood.

Outside operations are practically entirely cut off, except for strenuous efforts to remedy damage from the cold and to prevent additional damage.

Shipments, of course entirely from stock, are proceeding at the usually diminished rate for this time of year, but notwithstanding some heavy shipments in December to anticipate the increases in prices for January 1st, the shipments so far in January have exceeded those for January, 1939, when we were having little if any cold weather.

Monsanto and Victor are both still slowed down account of the still deferred ability to get cheap primary current, but would likely be unable to fully utilize it, even if now available, until the Alaskan cold is over.

Considerable publicity attached to recent visit of the ex-son-in-law of the President in connection with alleged phosphate operations being started by promoters of the Harpeth Valley Chemical Co., previously referred to here, but nothing any more definite than previous rumors is known.

## BRAZILIAN BONE EXPORTS PROHIBITED

A recent Brazilian decree prohibits the exportation of animal bones, whether intended for the production of glue, fertilizer, or other industrial purposes. The decree has naturally aroused opposition among the meat packing plants as the prices obtainable in local markets for bones, particularly for industrial use, are much lower than those prevailing in the United States and other foreign countries. However, there are no definite indications that the regulations will be revoked or amended to permit shipments under special arrangements.



Trade Mark Registered

## MAGNESIUM LIMESTONE

"It's a Dolomite"

**American Limestone Company**

Knoxville, Tenn.

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

# A Complete Service

**T**HE strategic factory locations of the American Agricultural Chemical Company, as shown on the accompanying map, assure prompt, dependable service for the complete line of products listed below.

We manufacture all grades of Commercial Fertilizers, Superphosphate, Agrinite Tankage, Bone Black, Bone Black Pigments (Cosmic Black), Dicalcium Phosphate, Monocalcium Phosphate, Gelatin, Glue, Ground Limestone, Crushed Stone, Agricultural Insecticides (including Pyrox, Arsenate of Lead, Calcium Arsenate, etc.), Trisodium and Disodium Phosphate, Phosphorus, Phosphoric Acid, Sulphuric Acid, Salt Cake; and we are importers and/or dealers in Nitrate of Soda, Cyanamid, Potash Salts, Sulphate of Ammonia, Raw Bone Meal, Steamed Bone Meal, Sheep and Goat Manure, Fish, Blood and Tin-Tetrachloride. We mine and sell all grades of Florida Pebble Phosphate Rock.



## FACTORIES

Alexandria, Va.	Detroit, Mich.	Pierce, Fla.
Baltimore, Md.	East Point, Ga.	Port Hope, Ont., Can.
Buffalo, N. Y.	East St. Louis, Ill.	Presque Isle, Me.
Carteret, N. J.	Greensboro, N. C.	Savannah, Ga.
Cayce, S. C.	Henderson, N. C.	Searsport, Maine
Chambly Canton,	Montgomery, Ala.	South Amboy, N. J.
Quebec, Can.	Norfolk, Va.	Spartanburg, S. C.
Charleston, S. C.	No. Weymouth, Mass.	West Haven, Conn.
Cincinnati, Ohio	Pensacola, Fla.	Wilmington, N. C.
Cleveland, Ohio		Havana, Cuba

## The AMERICAN AGRICULTURAL CHEMICAL Co.

50 Church Street, New York City

## SALES OFFICES



Alexandria, Va.	Columbia, S. C.	Laurel, Miss.	Pensacola, Fla.
Baltimore, Md.	Detroit, Mich.	Montgomery, Ala.	Pierce, Fla.
Buffalo, N. Y.	East Point, Ga.	Montreal, Quebec, Can.	Port Hope, Ont.
Carteret, N. J.	East St. Louis, Ill.		Savannah, Ga.
Charleston, S. C.	Greensboro, N. C.	New York, N. Y.	Spartanburg, S. C.
Cincinnati, Ohio	Henderson, N. C.	Norfolk, Va.	Wilmington, N. C.
Cleveland, Ohio	Houlton, Me.	No. Weymouth, Mass.	Havana, Cuba

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

## Fertilizer and Corn

More fertilizer was accounted for by the corn crop in 1938, according to data compiled in the National Fertilizer Association Consumer Survey, than by any other crop. Cotton was formerly far in the lead but the decline in cotton acreage has reduced it to second place. It is estimated that corn accounted for 22.3 per cent of total fertilizer tonnage in 1938, which was practically the same as the ratio ten years earlier. The cotton ratio declined from 31.4 per cent in 1927 to 20.5 per cent in 1938.

Most of the fertilizer for corn is used in the Southeast. The Survey figures indicate that more than 20 per cent of the total tonnage is sold in North Carolina, while the Carolinas, Georgia, and Alabama combined account for

55 per cent of the total. Less than 15 per cent of the tonnage for the entire country is used in Ohio, Indiana, Michigan, Illinois, and Missouri.

Since a large proportion of the cost of corn production is the same per acre regardless of yield, the production cost per bushel can be materially reduced by increasing the yield. As shown by the table below, average yield can be increased from 20 bushels per acre to 34 bushels by the use of fertilizer. This average is based on the experience of nearly 18,000 corn growers.

Giving consideration to the average price received by farmers for corn in 1938 and the price paid for fertilizer, the value of the increased yield was equivalent to \$2.07 for each dollar spent for fertilizer. Corn acreage this year will be about the same as in 1939, it has been forecast by the U. S. Department of Agriculture.

*Fertilizer and Corn*

State	1939 Corn Acreage (000)	Tons of Fertilizer Used on Corn* 1938	—Estimated Yields— Without Fertilizer      With Fertilizer		Pounds of Fertilizer Applied per Acre	Bus. of Corn Produced by 1 ton of Fertilizer	Value of Increased Yield per Dollar Spent for Fertilizer
N. Y. ....	671	28,000	43	64	267	157	\$1.94
Pa. ....	1,354	83,000	39	56	218	156	2.87
N. J. ....	185	23,000	31	55	343	140	2.08
Md. ....	506	23,000	29	42	255	102	1.89
W. Va. ....	482	24,000	31	50	238	160	2.15
Ohio ....	3,425	88,400	41	53	129	186	3.22
Mich. ....	1,542	18,000	38	49	105	171	3.92
Ind. ....	4,144	98,000	38	50	104	231	3.61
Ill. ....	8,093	24,000	43	57	133	211	1.62
Ky. ....	2,816	40,000	26	36	146	137	2.38
Mo. ....	4,090	10,000	24	32	87	184	2.81
Va. ....	1,391	89,000	24	36	265	91	1.72
N. C. ....	2,418	340,000	13	29	330	97	1.88
S. C. ....	1,754	195,000	9	23	277	101	1.56
Ga. ....	4,531	240,000	9	19	183	108	1.51
Ala. ....	3,550	122,000	12	24	176	136	1.81
Tenn. ....	2,581	29,000	26	37	172	128	2.35
Miss. ....	2,913	75,000	13	26	203	127	2.16
Ark. ....	2,217	16,000	15	24	152	120	1.67
La. ....	1,636	10,000	11	20	213	85	1.72
U. S. ....	90,734	1,633,000	20	34	240	115	\$2.07

\* Includes silage corn in certain states.

# NITROGENIC TANKAGE

*Let us tell you about this new fertilizer material. We solicit inquiries.*

**H. J. BAKER & BRO.**

**271 Madison Ave., NEW YORK**

**BALTIMORE    CHICAGO    SAVANNAH    TAMPA**

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.



### MODERNIZE Your Fertilizer or Acid Plant

with **CHEMICO UNITS** —

*Reduce Costs--Increase Output!*

Ammonia Oxidation Units  
Ammoniation Apparatus  
Masonry Glover and Gay-Lussac Towers  
Mechanical Superphosphate Dens  
Phosphoric Acid Concentrators  
Sulphuric Acid Plants  
Dry Mixing Plants  
Ammonium Phosphate Plants  
Complete Fertilizer Plants

### CHEMICAL CONSTRUCTION CORPORATION

*Contracting Chemical Engineers*  
30 Rockefeller Plaza, New York, N. Y.

**CHEMICO PLANTS are PROFITABLE INVESTMENTS**

## DEPENDABLE!

- Large stocks of seasoned materials, available for prompt shipment keyed to your needs.
- Dependable analysis—and every shipment reaches you in good mechanical condition. Write or wire us your next order for

## TRIPLE SUPERPHOSPHATE

46 to 48% Available Phosphoric Acid

*We also manufacture*  
**HIGH-GRADE SUPERPHOSPHATE**

**U. S. Phosphoric Products Corporation**  
Tampa, Florida

New York Offices:  
61 Broadway  
New York, N. Y.

Sales Agents:  
Bradley & Baker  
155 East 44th St.  
New York, N. Y.

A Mark of



Reliability

## SPECIFY THREE ELEPHANT



... WHEN BORON IS NEEDED TO CORRECT A DEFICIENCY OF THIS IMPORTANT SECONDARY ELEMENT

Agricultural authorities have shown that a lack of Boron in the soil can result in deficiency diseases which seriously impair the yield and quality of crops.

When Boron deficiencies are found, follow the recommendations of local County Agents or State Experiment Stations.

Information and references available on request.

**AMERICAN POTASH & CHEMICAL CORPORATION**  
70 PINE STREET, NEW YORK CITY

*Pioneer Producers of Muriate of Potash in America*  
See Page 4

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

## Superphosphate Production in 1939

Superphosphate production in 1939, according to reports by acidulators to The National Fertilizer Association, was 9 per cent larger than in 1938. It was 14 per cent less than in the peak recovery year of 1937, but with that exception the 1939 output was the largest in the last ten years. Production in the first eight months of 1939 was not much different from the corresponding period of 1938, but in each of the last four months there was a marked increase over the previous year. Total production at northern plants was 10 per cent greater in 1939 than in 1938, compared with a rise of 8 per cent for the South. For the second consecutive year reported production for the Northern Area was well above that in the Southern Area.

Aggregate shipments in 1939 by the reporting acidulators exceeded 1938 by 7 per cent, with increases of 10 per cent in the North and 4 per cent in the South. The biggest increase was reported in shipments to mixers.

Total stocks at the close of the year were 78,000 tons smaller than a year earlier, an increase of 38,000 tons in base and mixed goods being more than offset by a decline in stocks of bulk. The decline during the year was about evenly divided between the two areas. In relation to the current rate of consumption stocks are not at a comparatively high level. Comparative data on stocks at the year-end follow:

Year	Bulk	Base and Mixed Goods	Total
1933	929,000	440,000	1,369,000
1934	971,000	497,000	1,468,000
1935	1,014,000	554,000	1,568,000
1936	941,000	594,000	1,535,000
1937	1,135,000	710,000	1,845,000
1938	1,167,000	601,000	1,768,000
1939	1,052,000	638,000	1,690,000

On the basis of the production reported to The National Fertilizer Association it seems likely that total superphosphate production in 1939, including output of all producers, was about 4,200,000 equivalent tons of 16 per cent superphosphate.

### Accumulated Superphosphate Production and Shipments for 1938 and 1939 (Expressed in equivalent short tons of 16% A.P.A.)

	United States		Northern Area		Southern Area	
	1939	1938	1939	1938	1939	1938
<b>Production:</b>						
Bulk superphosphate .....	3,158,061	2,900,821	1,593,679	1,454,129	1,564,382	1,446,692
Base and mixed goods .....	139,441	132,316	112,596	99,310	26,845	33,006
<b>Total Production .....</b>	<b>3,297,502</b>	<b>3,033,137</b>	<b>1,706,275</b>	<b>1,553,439</b>	<b>1,591,227</b>	<b>1,479,698</b>
<b>Shipments:</b>						
Superphosphate:						
To mixers .....	1,255,613	836,873	691,148	392,862	564,465	444,011
To other acidulators .....	486,355	621,938	246,522	341,968	239,833	279,970
To consumers, etc. ....	721,909	764,283	388,092	395,649	333,817	368,634
<b>Total Superphosphate .....</b>	<b>2,463,877</b>	<b>2,223,094</b>	<b>1,325,762</b>	<b>1,130,479</b>	<b>1,138,115</b>	<b>1,092,615</b>
Base and mixed goods .....	1,315,410	1,309,615	620,782	644,431	694,628	665,184
<b>Total Shipments .....</b>	<b>3,779,287</b>	<b>3,532,709</b>	<b>1,946,544</b>	<b>1,774,910</b>	<b>1,832,743</b>	<b>1,757,799</b>
<b>Stocks—December 31st:</b>						
Bulk superphosphate .....	1,051,557	1,167,242	429,353	490,733	622,204	676,509
Base and mixed goods .....	638,440	600,861	279,757	255,451	358,683	345,410
<b>Total Stocks .....</b>	<b>1,689,997</b>	<b>1,768,103</b>	<b>709,110</b>	<b>746,184</b>	<b>980,887</b>	<b>1,021,919</b>

Base includes wet and/or dry base.

The division line between the Northern and Southern Areas is the southern boundary line of Virginia projected westward.



## STEDMAN Low Cost All Steel FERTILIZER MIXING UNITS

BATCH MIXERS

PAN MIXERS

TAILINGS PULVERIZERS

REVOLVING SCREENS

VIBRATING SCREENS

DUST WEIGH HOPPERS

ACID WEIGH SCALES

GRINDERS—SWING HAMMER

Founded 1884

TWO TYPES & SIZES  
CAPACITIES 5 to 60 TONS PER HOUR

CAGE MILLS

CLOD BREAKERS

MIXING SYSTEMS

COMPLETE PLANTS

STEDMAN'S FOUNDRY & MACHINE WORKS, 503 Indiana Ave., AURORA, INDIANA

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

• SOUTHERN PHOSPHATE CORPORATION •

Miners of FLORIDA LAND PEBBLE

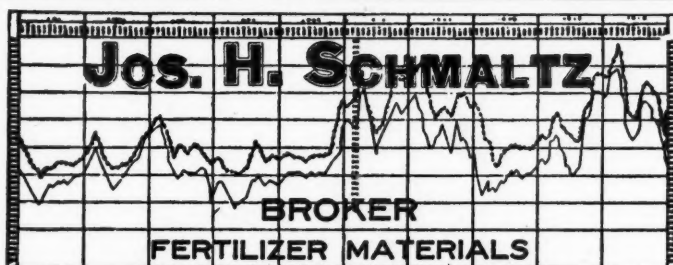
**PHOSPHATE ROCK**

~ all commercial grades!

Plants at Sangully, Pauway, Medulla and Ridgewood, Fla.

MAIN OFFICE • *Baltimore Trust Building* • BALTIMORE, MD.

Tankage  
Blood  
Bone  
All  
Ammoniates



327  
South  
La Salle  
Street  
CHICAGO

OFFICIAL BROKER FOR MILORGANITE

**BORAX  
BORIC ACID**

Use 20 Mule Team Borax or Boric Acid to supply Boron to the soil when recommended by the agricultural authorities.

Prices and complete information on request



Looking down on Death Valley from "Dante's View"



PACIFIC COAST BORAX COMPANY • 51 MADISON AVENUE, NEW YORK  
LOS ANGELES: 510 West 6th Street • CHICAGO: 2295 Lumber Street

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

## Fertilizer and Cotton

While the relative importance of cotton as a fertilizer-using crop has shown a marked decline in the past decade it still accounts for a million and a half tons a year. It has been eased out of first place by corn but it is a close second.

In the three years 1928, 1929 and 1930, fertilizer consumption accounted for by cotton, as reported by the U. S. Department of Agriculture, averaged 2,400,000 tons a year. This was 30 per cent of total fertilizer tonnage in that period. In 1939 cotton accounted for 1,500,000

likely that the amount of fertilizer purchased for cotton might show a small increase. In past years tonnage has tended to fluctuate with changes in cotton prices.

The average estimated yield, according to 11,000 cotton growers interviewed in our Consumer Survey, is 134 pounds per acre without fertilizer and 342 pounds with fertilizer. The value of the increased yield is equivalent to \$4.47 for each dollar spent for fertilizer. Data in the last three columns of the following table come from the Consumer Survey, while the figures in the first four columns are from the U. S. Department of Agriculture reports.

State	Cotton Acreage (000)	% of Acreage Fertilized	Tons of Fertilizer Used on Cotton	Pounds Applied per Acre	Estimated Yield		Value of Increased Yield per \$ Spent for Fertilizer
					Without Fertilizer	With Fertilizer	
N. C. ....	787	99%	167,000	430	145	375	\$3.65
S. C. ....	1,263	97	245,000	400	123	365	4.01
Ga. ....	2,064	99	306,000	300	107	304	4.01
Tenn. ....	742	51	39,000	205	249	428	5.98
Ala. ....	2,121	97	324,000	315	134	340	4.06
Miss. ....	2,648	72	215,000	225	148	350	5.75
Ark. ....	2,208	41	77,000	170	173	295	...
La. ....	1,151	60	58,000	170	160	287	4.31
Okla. ....	1,854	1	1,000	140	...	...	...
Texas ....	8,980	6	47,000	175	143	256	3.24
Other ....	1,125	1	21,000	...	...	...	...
U. S. ....	24,943	42.9	1,500,000	281	134	342	4.47

tons of fertilizer, or 20 per cent of total tonnage. While 1939 total fertilizer consumption was 565,000 tons below the 1928-1930 average there was a decline of 900,000 tons used on cotton. Consumption accounted for by other crops increased 335,000 tons.

The decline of nearly 40 per cent in domestic cotton acreage has of course been largely responsible for the decline in the amount of fertilizer used on cotton in the last ten years. Likewise the planting of part of the acreage taken out of cotton to other crops helps to explain in part the increase of fertilizer used on crops other than cotton.

The cotton acreage allotment for 1940 is about the same as it was for 1939. Cotton prices are currently one-fourth larger than a year ago, and if the price remains at about the present level through the planting season it is possible that planted acreage might be a little larger than last year. With acreage fully up to last year, and with prices higher, it seems

## CLASSIFIED ADVERTISEMENTS

### FOR SALE

ONE Pratt mixing pan, complete; this includes pan, base, bottom, top, ring gear, dust hopper, scale, gears and gearing. The bottom, pan, ring gear and base were bought new in 1937 and are now in perfect order. Price reasonable. Apply **MERCHANTS FERTILIZER COMPANY, CHARLESTON, S. C.**

### WANTED

A GOOD second-hand Walker & Elliott Mixer. Address **RIVERTON LIME & STONE COMPANY, RIVERTON, VA.**

### POSITION WANTED

ONE incompetent, old Superintendent offers himself for hire. You might be surprised with results obtained in both business and factory ends. Address "455", Care **THE AMERICAN FERTILIZER, PHILA., PA.**

# L.W. HUBER COMPANY

Brokers

# Fertilizer Materials

ROOM 903  
170 Broadway  
New York, N.Y.

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

For over 20 years we have  
served the Fertilizer Industry

### **ACID-PROOF CEMENT**

Ready Mixed—For Immediate Use  
Packed in 250-lb. Steel Drums  
Dry-Packed in 100-lb. Bags

### **CHEMICAL PUTTY**

Stops Acid, Gas and Water Leaks

### **QUARTZ PEBBLES**

Graded to Size

### **FILTER GRAVEL, FILTER SAND**

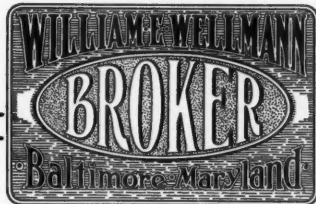
### **ACID VALVES**

SOUTHERN DISTRIBUTORS OF  
**CALGON** (Sodium Hexametaphosphate)

### **ACID BRICK, SPIRAL RINGS**

### **Charlotte Chemical Laboratories**

INCORPORATED  
Laboratories, Plant, Office  
CHARLOTTE, N. C.



*Specializing in*

Sulphate of Ammonia  
Low Grade Ammoniates  
Superphosphate  
Sulphuric Acid  
Bags

*Inquiries and offerings  
invited*

**KEYSER BUILDING**

## ***The Fertilizer Industry Marches On!***

**HAVE YOU KEPT PACE** with the latest developments? Are you familiar with the new materials now offered to the trade? Or with the current official definitions of fertilizer materials adopted by Control Officials? You will find them all in

The Revised and Enlarged Edition of

## **THE POCKET DICTIONARY OF FERTILIZER MATERIALS and TERMS**

PRICE 50 CENTS PER COPY

Some companies find it profitable to provide a Dictionary for each of their salesmen, agents and dealers. Special prices for quantity purchases.

The Dictionary can also be furnished with your own sales message on the cover spaces. We shall be glad to submit samples and prices.

**WARE BROS. COMPANY, Publishers**

1330 VINE STREET :: :: :: PHILADELPHIA, PA.

# BUYERS' GUIDE

A CLASSIFIED INDEX TO ALL THE ADVERTISERS IN "THE AMERICAN FERTILIZER"



This list contains representative concerns in the Commercial Fertilizer Industry, including fertilizer manufacturers, machinery and equipment manufacturers, dealers in and manufacturers of commercial fertilizer materials and supplies, brokers, chemists, etc.  
For Alphabetical List of Advertisers, see page 33.



## ACID BRICK

Charlotte Chem. Laboratories, Inc., Charlotte, N. C.  
Chemical Construction Corp., New York City.

## ACID EGGS

Chemical Construction Corp., New York City.

## ACIDULATING UNITS

Chemical Construction Corp., New York City.

## AMMO-PHOS

American Cyanamid Co., New York City.

## AMMONIA—Anhydrous

Barrett Company, The, New York City.  
Du Pont de Nemours & Co., E. I., Wilmington, Del.  
Hydrocarbon Products Co., New York City.

## AMMONIA LIQUOR

Barrett Company, The, New York City.  
Du Pont de Nemours & Co., E. I., Wilmington, Del.  
Hydrocarbon Products Co., New York City.

## AMMONIA OXIDATION UNITS

Chemical Construction Corp., New York City.

## AMMONIATING EQUIPMENT

Sackett & Sons Co., The A. J., Baltimore, Md.

## APPARATUS—Laboratory

Sturtevant Mill Co., Boston, Mass.

## AUTOMATIC ELEVATOR TAKEUPS

Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.

## BABBITT

Sackett & Sons Co., The A. J., Baltimore, Md.

## BAGS AND BAGGING—Manufacturers

Bagpak, Inc., New York City.  
Bemis Bro. Bag Co., St. Louis, Mo.  
Fulton Bag & Cotton Mills, Atlanta, Ga.

## BAGS—Cotton

Bemis Bro. Bag Co., St. Louis, Mo.  
Fulton Bag & Cotton Mills, Atlanta, Ga.

## BAGS—Paper

Bagpak, Inc., New York City.  
Bemis Bro. Bag Co., St. Louis, Mo.

## BAGS (Waterproof)—Manufacturers

Bemis Bro. Bag Co., St. Louis, Mo.  
Fulton Bag & Cotton Mills, Atlanta, Ga.

## BAGS—Dealers and Brokers

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Huber & Company, New York City.  
Jett, Joseph C., Norfolk, Va.  
Taylor, Henry L., Wilmington, N. C.  
Wellmann, William E., Baltimore, Md.

## BAGGING MACHINES—For Filling Sacks

Atlanta Utility Works, East Point, Ga.  
Bagpak, Inc., New York City.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Sturtevant Mill Co., Boston, Mass.

## BAG-CLOSING MACHINES

Bagpak, Inc., New York City.

## BAG FILERS

Link-Belt Company, Philadelphia, Chicago.

## BEARINGS

Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.

## BELT LACING

Flexible Steel Lacing Co., Chicago, Ill.

## BELTING—Chala

Atlanta Utility Works, East Point, Ga.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## BELTING—Leather, Rubber, Canvas

Sackett & Sons Co., The A. J., Baltimore, Md.  
Sturtevant Mill Co., Boston, Mass.

## BOILERS—Steam

Atlanta Utility Works, East Point, Ga.

## BONE BLACK

American Agricultural Chemical Co., New York City.  
Armour Fertilizer Works, Atlanta, Ga.  
Huber & Company, New York City.

## BONE PRODUCTS

American Agricultural Chemical Co., New York City.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Huber & Company, New York City.  
Jett, Joseph C., Norfolk, Va.  
Schmaltz, Jos. H., Chicago, Ill.  
Wellmann, William E., Baltimore, Md.

## BORAX AND BORIC ACID

American Potash and Chem. Corp., New York City.  
Pacific Coast Borax Co., New York City.

## BROKERS

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Burns & Company, L. D., Atlanta, Ga.  
Huber & Company, New York City.  
Jett, Joseph C., Norfolk, Va.  
Keim, Samuel L., Philadelphia, Pa.  
Schmaltz, Jos. H., Chicago, Ill.  
Taylor, Henry L., Wilmington, N. C.  
Wellmann, William E., Baltimore, Md.

## BUCKETS—Elevator

Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

# HENRY L. TAYLOR, Broker

Bentley's Code Cable Address "HLTAYLOR"  
NORTH CAROLINA BANK BLDG., WILMINGTON, N. C.

Menhaden Fish Products  
and  
Fertilizer Materials

A Classified Index to Advertisers in  
"The American Fertilizer"

## BUYERS' GUIDE

For an Alphabetical List of all the  
Advertisers, see page 23

**BUCKETS**—For Hoists, Cranes, etc., Clam Shell, Orange  
Peel, Drag line, Special; Electrically Operated and  
Multi Power

Hayward Company, The, New York City.  
Link-Belt Company, Philadelphia, Chicago.

**BURNERS**—Sulphur

Chemical Construction Corp., New York City.

**BURNERS**—Oil

Monarch Mfg. Works, Inc., Philadelphia, Pa.

**CABLEWAYS**

Hayward Company, The, New York City.

**CALCIUM-NITRATE**

Synthetic Nitrogen Products Co., New York City.

**CAL-NITRO**

Synthetic Nitrogen Products Co., New York City.

**CARBONATE OF AMMONIA**

American Agricultural Chemical Co., New York City.  
Du Pont de Nemours & Co., E. I., Wilmington, Del.

**CARS**—For Moving Materials

Link-Belt Company, Philadelphia, Chicago.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

**CARTS**—Fertilizer, Standard and Roller Bearing

Atlanta Utility Works, East Point, Ga.

**CASTINGS**—Acid Resisting

Charlotte Chem. Laboratories, Inc., Charlotte, N. C.  
Durlon Co., Inc., The, Dayton, Ohio.

**CASTINGS**—Iron and Steel

Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

**CEMENT**—Acid-Proof

Charlotte Chem. Laboratories, Inc., Charlotte, N. C.  
Chemical Construction Corp., New York City.

**CHAIN DRIVES**—Silent

Link-Belt Company, Philadelphia, Chicago.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

**CHAINS AND SPROCKETS**

Jeffrey Mfg. Co., Columbus, Ohio.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

**CHAMBERS**—Acid

Chemical Construction Corp., New York City.  
Fairlie, Andrew M., Atlanta, Ga.

**CHEMICAL APPARATUS**

Charlotte Chem. Laboratories, Inc., Charlotte, N. C.  
Durlon Co., Inc., The, Dayton, Ohio.  
Monarch Mfg. Works, Inc., Philadelphia, Pa.

**CHEMICALS**

American Agricultural Chemical Co., New York City.  
American Cyanamid Co., New York City.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Barrett Company, The, New York City.  
Bradley & Baker, New York City.  
Du Pont de Nemours & Co., E. I., Wilmington, Del.

**CHEMICALS**—Continued

Huber & Company, New York City.  
Wellmann, William E., Baltimore, Md.

**CHEMICAL PLANT CONSTRUCTION**

Atlanta Utility Works, East Point, Ga.  
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.  
Chemical Construction Corp., New York City.  
Fairlie, Andrew M., Atlanta, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

**CHEMISTS AND ASSAYERS**

Gascoyne & Co., Baltimore, Md.  
Morris Testing Laboratories, Macon, Ga.  
Shuey & Co., Savannah, Ga.  
Stillwell & Gladding, New York City.  
Willey & Company, Baltimore, Md.

**CLUTCHES**

Chain Belt Company, Milwaukee, Wis.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

**CONCENTRATORS**—Sulphuric Acid

Chemical Construction Corp., New York City.  
Fairlie, Andrew M., Atlanta, Ga.

**CONDITIONERS AND FILLERS**

American Limestone Co., Knoxville, Tenn.  
Burns & Company, L. D., Atlanta, Ga.

**CONTACT ACID PLANTS**

Chemical Construction Corp., New York City.

**COTTONSEED PRODUCTS**

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Burns & Company, L. D., Atlanta, Ga.  
Huber & Company, New York City.  
Jett, Joseph C., Norfolk, Va.  
Schmalz, Jos. H., Chicago, Ill.  
Taylor, Henry L., Wilmington, N. C.  
Wellmann, William E., Baltimore, Md.

**CRANES AND DERRICKS**

Hayward Company, The, New York City.  
Link-Belt Company, Philadelphia, Chicago.  
Link-Belt Speeder Corp., Chicago, Ill. and Cedar  
Rapids, Iowa.

**CYANAMID**

American Agricultural Chemical Co., New York City.  
American Cyanamid Co., New York City.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Jett, Joseph C., Norfolk, Va.  
Taylor, Henry L., Wilmington, N. C.  
Wellmann, William E., Baltimore, Md.

**DENS**—Superphosphate

Chemical Construction Corp., New York City.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

**Andrew M. Fairlie**

CHEMICAL ENGINEER

22 Marietta Street  
Building  
ATLANTA, GA.  
CABLE ADDRESS: "SULFACID ATLANTA"

**SULPHURIC Acid Plants . . . Design, Construction,  
Equipment . . . Operation . . . Mills-Packard Water-  
Cooled Acid Chambers, Gaillard Acid-Cooled Chambers,  
Gaillard Acid Dispersers, Contact Process Sulphuric  
Acid Plants.**

A Classified Index to Advertisers in  
"The American Fertilizer"

## BUYERS' GUIDE

For an Alphabetical List of all the  
Advertisers, see page 23

### DISINTEGRATORS

Atlanta Utility Works, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

### DOUBLE SUPERPHOSPHATE (See Superphosphate—Concentrated)

### DRYERS—Direct Heat

Sackett & Sons Co., The A. J., Baltimore, Md.

### DRIVES—Electric

Link-Belt Company, Philadelphia, Chicago.

### DUMP CARS

Link-Belt Company, Philadelphia, Chicago.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

### DUST COLLECTING SYSTEMS

Sturtevant Mill Co., Boston, Mass.

### ELECTRIC MOTORS AND APPLIANCES

Atlanta Utility Works, East Point, Ga.

### ELEVATORS

Atlanta Utility Works, East Point, Ga.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

### ELEVATORS AND CONVEYORS—Portable

Link-Belt Company, Philadelphia, Chicago.  
Sturtevant Mill Co., Boston, Mass.

### ENGINEERS—Chemical and Industrial

Chemical Construction Corp., New York City.  
Fairlie, Andrew M., Atlanta, Ga.  
Link-Belt Company, Philadelphia, Chicago.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

### ENGINES—Steam

Atlanta Utility Works, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.

### EXCAVATORS AND DREDGES—Drag Line and Cableway

Hayward Company, The, New York City.  
Link-Belt Company, Philadelphia, Chicago.  
Link-Belt Speeder Corp., Chicago, Ill. and Cedar Rapids, Iowa.

### FERTILIZER MANUFACTURERS

American Agricultural Chemical Co., New York City.  
American Cyanamid Co., New York City.  
Armour Fertilizer Works, Atlanta, Ga.  
Farmers Fertilizer Co., Columbus, Ohio.  
International Agricultural Corp., New York City.  
Smith-Rowland Co., Norfolk, Va.  
U. S. Phosphoric Products Corp., New York City.

### FISH SCRAP AND OIL

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Burns & Company, L. D., Atlanta, Ga.  
Huber & Company, New York City.  
Jett, Joseph C., Norfolk, Va.  
Taylor, Henry L., Wilmington, N. C.  
Wellmann, William E., Baltimore, Md.

### FOUNDERS AND MACHINISTS

Atlanta Utility Works, East Point, Ga.  
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

### GARBAGE TANKAGE

Wellmann, William E., Baltimore, Md.

### GEARS—Machine Moulded and Cut

Jeffrey Mfg. Co., Columbus, Ohio.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

### GEARS—Silent

Link-Belt Company, Philadelphia, Chicago.

### GELATINE AND GLUE

American Agricultural Chemical Co., New York City.

### GUANO

Baker & Bro., H. J., New York City.

### HOISTS—Electric, Floor and Cage Operated, Portable

Hayward Company, The, New York City.

### HOPPERS

Atlanta Utility Works, East Point, Ga.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

### IMPORTERS, EXPORTERS

Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Wellmann, William E., Baltimore, Md.

### INSECTICIDES

American Agricultural Chemical Co., New York City.  
Burns & Company, L. D., Atlanta, Ga.

### LACING—Belt

Flexible Steel Lacing Co., Chicago, Ill.

### LIMESTONE

American Agricultural Chemical Co., New York City.  
American Limestone Co., Knoxville, Tenn.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Wellmann, William E., Baltimore, Md.

### LOADERS—Car and Wagen, for Fertilizers

Link-Belt Company, Philadelphia, Chicago.

### MACHINERY—Acid Making

Atlanta Utility Works, East Point, Ga.  
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.  
Chemical Construction Corp., New York City.  
Durlon Co., Inc., The, Dayton, Ohio.  
Fairlie, Andrew M., Atlanta, Ga.  
Monarch Mfg. Works, Inc., Philadelphia, Pa.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

### MACHINERY—Coal and Ash Handling

Hayward Company, The, New York City.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.

### MACHINERY—Elevating and Conveying

Atlanta Utility Works, East Point, Ga.  
Hayward Company, The, New York City.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

A Classified Index to Advertisers in  
"The American Fertilizer"

## BUYERS' GUIDE

For an Alphabetical List of all the  
Advertisers, see page 33

### MACHINERY—Grinding and Pulverizing

Atlanta Utility Works, East Point, Ga.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

### MACHINERY—Power Transmission

Jeffrey Mfg. Co., Columbus, Ohio.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

### MACHINERY—Pumping

Atlanta Utility Works, East Point, Ga.  
Durlon Co., Inc., The, Dayton, Ohio.

### MACHINERY—Tankage and Fish Scrap

Atlanta Utility Works, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

### MAGNETS

Atlanta Utility Works, East Point, Ga.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

### MIXERS

Atlanta Utility Works, East Point, Ga.  
Ransome Concrete Machinery Co., Dunellen, N. J.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

### NITRATE OF SODA

American Agricultural Chemical Co., New York City.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Barrett Company, The, New York City.  
Bradley & Baker, New York City.  
Chilean Nitrate Sales Corp., New York City.  
Huber & Company, New York City.  
International Agricultural Corp., New York City.  
Schmalts, Jos. H., Chicago, Ill.  
Wellmann, William E., Baltimore, Md.

### NITRATE OVENS AND APPARATUS

Chemical Construction Corp., New York City.

### NITROGENOUS ORGANIC MATERIAL

American Agricultural Chemical Co., New York City.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Burns & Company, L. D., Atlanta, Ga.  
Du Pont de Nemours & Co., E. I., Wilmington, Del.  
Huber & Company, New York City.  
International Agricultural Corp., New York City.  
Smith-Rowland Co., Norfolk, Va.  
Wellmann, William E., Baltimore, Md.

### NOZZLES—Spray

Monarch Mfg. Works, Inc., Philadelphia, Pa.

### PACKING—For Acid Towers

Charlotte Chem. Laboratories, Inc., Charlotte, N. C.  
Chemical Construction Corp., New York City.

### PANS AND POTS

Stedman's Foundry and Mach. Works, Aurora, Ind.

### PHOSPHATE MINING PLANTS

Chemical Construction Corp., New York City.

### PHOSPHATE ROCK

American Agricultural Chemical Co., New York City.  
American Cyanamid Co., New York City.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Charleston Mining Co., Inc., Richmond, Va.  
Huber & Company, New York City.  
International Agricultural Corp., New York City.  
Jett, Joseph C., Norfolk, Va.  
Ruhm, H. D., Mount Pleasant, Tenn.  
Schmalts, Jos. H., Chicago, Ill.  
Southern Phosphate Corp., Baltimore, Md.  
Taylor, Henry L., Wilmington, Del.  
Wellmann, William E., Baltimore, Md.

### PIPE—Acid Resisting

Durlon Co., Inc., The, Dayton, Ohio.

### PIPES—Chemical Stoneware

Chemical Construction Corp., New York City.

### PIPES—Wooden

Stedman's Foundry and Mach. Works, Aurora, Ind.

### PLANT CONSTRUCTION—Fertilizer and Acid

Chemical Construction Corp., New York City.  
Fairlie, Andrew M., Atlanta, Ga.

### POTASH SALTS—Dealers and Brokers

American Agricultural Chemical Co., New York City.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Huber & Company, New York City.  
International Agricultural Corp., New York City.  
Jett, Joseph C., Norfolk, Va.  
Schmalts, Jos. H., Chicago, Ill.  
Synthetic Nitrogen Products Co., New York City.  
Taylor, Henry L., Wilmington, Del.  
Wellmann, William E., Baltimore, Md.

### POTASH SALTS—Manufacturers and Importers

American Potash and Chem. Corp., New York City.  
Potash Co. of America, Baltimore, Md.  
United States Potash Co., New York City.

### PULLEYS AND HANGERS

Atlanta Utility Works, East Point, Ga.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

### PUMPS—Acid-Resisting

Charlotte Chem. Laboratories, Inc., Charlotte, N. C.  
Durlon Co., Inc., The, Dayton, Ohio.  
Monarch Mfg. Works, Inc., Philadelphia, Pa.

### PYRITES—Brokers

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Jett, Joseph C., Norfolk, Va.  
Wellmann, William E., Baltimore, Md.

### QUARTZ

Charlotte Chem. Laboratories, Inc., Charlotte, N. C.

### RINGS—Sulphuric Acid Tower

Chemical Construction Corp., New York City.

A Classified Index to Advertisers in  
"The American Fertilizer"

## BUYERS' GUIDE

For an Alphabetical List of all the  
Advertisers, see page 33

### ROUGH AMMONIATES

Bradley & Baker, New York City.  
Schmalts, Jos. H., Chicago, Ill.  
Wellmann, William E., Baltimore, Md.

### SCALES—Including Automatic Bagging

Atlanta Utility Works, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

### SCRAPERS—Drag

Hayward Company, The, New York City.  
Link-Belt Company, Philadelphia, Chicago.

### SCREENS

Atlanta Utility Works, East Point, Ga.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

### SEPARATORS—Air

Sturtevant Mill Co., Boston, Mass.

### SEPARATORS—Including Vibrating

Link-Belt Company, Philadelphia, Chicago.  
Sturtevant Mill Co., Boston, Mass.

### SEPARATORS—Magnetic

Stedman's Foundry and Mach. Works, Aurora, Ind.

### SHAPING

Atlanta Utility Works, East Point, Ga.  
Link-Belt Company, Philadelphia, Chicago.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman's Foundry and Mach. Works, Aurora, Ind.

### SHOVELS—Power

Link-Belt Company, Philadelphia, Chicago.  
Link-Belt Speeder Corp., Chicago, Ill. and Cedar  
Rapids, Iowa.

### SPRAYS—Acid Chambers

Monarch Mfg. Works, Inc., Philadelphia, Pa.

### SPROCKET WHEELS (See Chains and Sprockets)

### STACKS

Sackett & Sons Co., The A. J., Baltimore, Md.

### SULPHATE OF AMMONIA

American Agricultural Chemical Co., New York City.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Barrett Company, The, New York City.  
Bradley & Baker, New York City.  
Burns & Company, L. D., Atlanta, Ga.  
Huber & Company, New York City.  
Hydrocarbon Products Co., New York City.  
Jett, Joseph C., Norfolk, Va.  
Schmalts, Jos. H., Chicago, Ill.  
Synthetic Nitrogen Products Co., New York City.  
Taylor, Henry L., Wilmington, N. C.  
Wellmann, William E., Baltimore, Md.

### SULPHUR

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Texas Gulf Sulphur Co., New York City.

### SULPHURIC ACID

American Agricultural Chemical Co., New York City.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Huber & Company, New York City.

### SULPHURIC ACID—Continued

Jett, Joseph C., Norfolk, Va.  
Taylor, Henry L., Wilmington, N. C.  
U. S. Phosphoric Products Corp., New York City.  
Wellmann, William E., Baltimore, Md.

### SUPERPHOSPHATE

American Agricultural Chemical Co., New York City.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Burns & Company, L. D., Atlanta, Ga.  
Huber & Company, New York City.  
International Agricultural Corp., New York City.  
Jett, Joseph C., Norfolk, Va.  
Schmalts, Jos. H., Chicago, Ill.  
Taylor, Henry L., Wilmington, N. C.  
U. S. Phosphoric Products Corp., New York City.  
Victor Chemical Works, Chicago, Ill.  
Wellmann, William E., Baltimore, Md.

### SUPERPHOSPHATE—Concentrated

Armour Fertilizer Works, Atlanta, Ga.  
International Agricultural Corp., New York City.  
U. S. Phosphoric Products Corp., New York City.  
Victor Chemical Works, Chicago, Ill.

### SYPHONS—For Acid

Monarch Mfg. Works, Inc., Philadelphia, Pa.

### TALLOW AND GREASE

American Agricultural Chemical Co., New York City.

### TANKAGE

American Agricultural Chemical Co., New York City.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Baker & Bro., H. J., New York City.  
Bradley & Baker, New York City.  
Burns & Company, L. D., Atlanta, Ga.  
International Agricultural Corp., New York City.  
Jett, Joseph C., Norfolk, Va.  
Schmalts, Jos. H., Chicago, Ill.  
Smith-Rowland Co., Norfolk, Va.  
Taylor, Henry L., Wilmington, N. C.  
Wellmann, William E., Baltimore, Md.

### TANKAGE—Garbage

Huber & Company, New York City.

### TANKS

Sackett & Sons Co., The A. J., Baltimore, Md.

### TILE—Acid-Proof

Charlotte Chem. Laboratories, Inc., Charlotte, N. C.

### TOWERS—Acid and Absorption

Chemical Construction Corp., New York City.  
Fairlie, Andrew M., Atlanta, Ga.

### UNLOADERS—Car and Boat

Hayward Company, The, New York City.  
Link-Belt Company, Philadelphia, Chicago.

### UREA

Du Pont de Nemours & Co., E. I., Wilmington, Del.  
Synthetic Nitrogen Products Co., New York City.

### UREA-AMMONIA LIQUOR

Du Pont de Nemours & Co., E. I., Wilmington, Del.

### VALVES—Acid-Resisting

Atlanta Utility Works, East Point, Ga.  
Charlotte Chem. Laboratories, Inc., Charlotte, N. C.  
Durlon Co., Inc., The, Dayton, Ohio.  
Monarch Mfg. Works, Inc., Philadelphia, Pa.

### WHEELBARROWS (See Carts)

## ALPHABETICAL LIST OF ADVERTISERS

For Classified Index, see pages 28 to 32, inclusive

- American Agricultural Chemical Co., New York City .....21  
 American Cyanamid Co., New York City...—  
 American Limestone Co., Knoxville, Tenn..20  
 American Potash and Chemical Corp., New York City .....4, 23  
 Armour Fertilizer Works, Atlanta, Ga.....16  
 Ashcraft-Wilkinson Co., Atlanta, Ga.,  
 Front cover  
 Atlanta Utility Works, East Point, Ga.....—  
 Bagpak, Inc., New York City .....—  
 Baker & Bro., H. J., New York City,  
 22, Back cover  
 Barrett Company, The, New York City....—  
 Bemis Bro. Bag Co., St. Louis, Mo.....19  
 Bradley & Baker, New York City.....14  
 Burns & Company, L. D., Atlanta, Ga.....—  
 Charleston Mining Co., Inc., Richmond, Va. 4  
 Charlotte Chemical Lab., Charlotte, N. C...27  
 Chemical Construction Corp., New York City .....23  
 Chilean Nitrate Sales Corp., New York City 18  
 Dougherty, Jr., E., Philadelphia, Pa. ....33  
 Du Pont de Nemours & Co., E. I., Wilming-  
 ton, Del. ....—  
 Duriron Company, Dayton, Ohio.....—  
 Fairlie, Andrew M., Atlanta, Ga. ....29  
 Farmers Fertilizer Co., Columbus, Ohio ...34  
 Flexible Steel Lacing Co., Chicago, Ill. ....—  
 Fulton Bag & Cotton Mills, Atlanta, Ga. ..—  
 Gascoyne & Co., Inc., Baltimore, Md. ....34  
 Hayward Company, The, New York City ..34  
 Huber Company, L. W., New York City..26  
 Hydrocarbon Products Co., New York City 17  
 International Agricultural Corporation, New York City .....2d cover  
 Jeffrey Mfg. Co., Columbus, Ohio .....—  
 Jett, Joseph C., Norfolk, Va. ....34  
 Keim, Samuel D., Philadelphia, Pa. ....33  
 Link-Belt Company, Chicago, Ill.....—  
 Monarch Mfg. Works, Inc., Philadelphia, Pa. ....34  
 N. V. Potash Export My., New York City.—  
 Pacific Coast Borax Co., New York City...25  
 Polk Co., R. L., Detroit, Mich. ....—  
 Potash Co. of America, Baltimore, Md.,  
 3d cover  
 Ransome Concrete Machinery Co., Dunellen,  
 N. J. ....—  
 Ruhm, H. D., Columbia, Tenn. ....34  
 Sackett & Sons Co., The, A. J., Baltimore,  
 Md. ....—  
 Schmaltz, Jos. H., Chicago, Ill.....25  
 Shuey & Co., Savannah, Ga. ....34  
 Smith-Rowland Co., Norfolk, Va. ....—  
 Southern Phosphate Corp., Baltimore, Md. 25  
 Stedman's Foundry and Machine Works,  
 Aurora, Ind. ....24  
 Stillwell & Gladding, New York City ....34  
 Sturtevant Mill Co., Boston, Mass. ....—  
 Synthetic Nitrogen Products Co., New York City .....—  
 Taylor, Henry L., Wilmington, N. C. ....28  
 Tennessee Corporation, Atlanta, Ga.....—  
 Texas Gulf Sulphur Co., New York City...—  
 U. S. Phosphoric Products Corp., New York City .....23  
 United States Potash Co., New York City 3  
 Victor Chemical Works, Chicago, Ill.....—  
 Wellmann, William E., Baltimore, Md....27  
 Wiley & Company, Inc., Baltimore, Md....34

### SAMUEL D. KEIM

#### By-Products and Fertilizer Materials

(SINCE 1898)

1612 MARKET STREET  
PHILADELPHIA, PENNA.

E. DOUGHERTY, JR., Manager

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

## MONARCH SPRAYS



This is our Fig. 645 Nozzle. Used for Scrubbing Acid Phosphate Gases. Made for "full" or "hollow" cone in Brass and "Everdur." We also make "Non-Clog" Nozzles in Brass and Steel, and Stoneware Chamber Sprays now used by nearly all chamber spray sulphuric acid plants.

CATALOG 6-C

MONARCH MFG. WORKS, INC.

Westmoreland and Emery Sts., Philadelphia, Pa.

## Stillwell &amp; Gladding

Established 1868

WE MAKE ANALYSES OF  
ALL KINDS

130 Cedar Street :: NEW YORK

## SHUEY &amp; COMPANY, Inc.

Specialty: Analysis of Fertilizer Materials and Phosphate Rock. Official Chemists for both Florida Hard Rock Phosphate and Pebble Phosphate Export Associations. Official Weigher and Sampler for the National Cottonseed Products Association at Savannah; also Official Chemists for National Cottonseed Products Association.

115 E. BAY STREET, SAVANNAH, GA.

## Hayward Buckets



Use this Hayward Class "K" Clam Shell for severe superphosphate digging and handling.

THE HAYWARD CO., 202 Fulton St., New York



## GASCOYNE &amp; CO., INC.

Established 1887

Chemists and Assayers

Public Weighers and Samplers

27 South Gay Street - BALTIMORE, MD.

## The Farmers Fertilizer Co.

Manufacturers

COMPLETE FERTILIZERS

BULK SUPERPHOSPHATE

SULPHURIC ACID

Acid plant capacity, 45,000 tons. Fertilizer plant capacity, 50,000 tons

Get in touch with us.

COLUMBUS, OHIO

## FOR SALE

UP TO 5,000 ACRES OF TENNESSEE

PHOSPHATE LANDS

Mineral Rights or Fee Simple

BEST AND SAFEST PLACE TO INVEST

IDLE MONEY

H. D. RUHM

COLUMBIA, TENN.

## WILEY &amp; COMPANY, Inc.

Analytical and Consulting  
Chemists

BALTIMORE, MD.

JETT  
BROKER

## ALL FERTILIZER MATERIALS

FISH SCRAP for Fertilizer and Fish Meal for Feed, Nitrate of Soda, Sulphate of Ammonia, Potash Salts, Superphosphate (Acid Phosphate), Meals, South American and Domestic Tankage and Blood, Foreign Fish Guano.

JOS. C. JETT

Board of Trade  
Building

NORFOLK, VA.

Get the  
Latest  
Edition

It defines many new fertilizer terms which have not appeared in any previous edition of the handy

Pocket Dictionary of  
Fertilizer MaterialsOnly 50 cents per copy  
Special prices on quantity lots

WARE BROS. COMPANY, Publishers, 1330 Vine St., PHILA.

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.



To Atlantic ports by  
coastwise freighter;  
to inland points by  
fast freight direct  
from Carlsbad, New  
Mexico — American  
potash for American  
manufacturers.

Muriate of Potash  
50% and 60%  
Manure Salts

## POTASH COMPANY *of America*

GENERAL SALES OFFICE

MERCANTILE TRUST BUILDING

BALTIMORE, MARYLAND

SOUTHERN SALES OFFICE  
MORTGAGE GUARANTEE BUILDING  
ATLANTA, GEORGIA

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

90 YEARS OF SERVICE



# H. J. BAKER & BRO.

271 Madison Ave., NEW YORK

BALTIMORE - CHICAGO - SAVANNAH - TAMPA

*Sole Distributors of*

**DRIED ACTIVATED SLUDGE**  
**SANITARY DISTRICT of CHICAGO**

**IMPORTERS**

**EXPORTERS**

POTASH SALTS  
SULPHATE of AMMONIA  
NITRATE of SODA  
PERUVIAN BIRD GUANO  
FISH MEAL, BONE MEAL  
TANKAGE, BLOOD  
NITROGENOUS  
AND ALL OTHER  
FERTILIZER MATERIALS

MENTION "THE AMERICAN FERTILIZER" WHEN WRITING TO ADVERTISERS.

